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GALLSTONE OBSTRUCTION

PATHOGENESIS AND ROENTGEN MANIFESTATIONS

LEO G. RIGLER, M.D.

C. N. BORMAN, M.D.

MINNEAPOLIS

AND

JOHN F. NOBLE, M.D.

ST. PAUL

The recognition of the specific nature of an obstructing lesion of the bowel is a vastly important expedient in the proper management of intestinal obstruction. With the introduction of suction therapy for the treatment of acute obstruction by Wangensteen and Paine,[1] the need for exact diagnosis has become even more pressing. While it is clear that in certain cases simple mechanical obstruction of the small bowel can be treated successfully without recourse to surgery, the management of obstruction of the small bowel by decompression is not without danger, especially when the exact nature of the lesion has not been ascertained. In certain instances of diagnostic uncertainty, suction decompression of the bowel postpones the inevitable train of events and creates a false sense of security. Gallstone ileus is one of the conditions in which temporizing procedures are not indicated; once this diagnosis is established, the hazard of any procedure other than surgical intervention is well recognized.

From our own experience with gallstone obstruction, as well as from the impression gained from reported cases, it appears clear that, in most instances, an exact diagnosis of dynamic ileus due to gallstones can be determined by means of roentgen examination.

The isolated reported cases in which a preoperative diagnosis of gallstone obstruction has been made are far outnumbered by the decisions emanating from the surgical or even from the autopsy table. It is not surprising to note mortality statistics which range from 33 to 93 per cent and which average close to 50 per cent, since delay in diagnosis has long been recognized as the important cause of poor results in the treatment of intestinal obstruction. It is our opinion that the almost total failure of specific diagnosis in gallstone obstruction prior to 1930, with the correspondingly high mortality, can be converted to a reasonably high percentage of accurate diagnoses with an inevitable improvement in the recovery rate.

Read before the Section on Radiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

Owing to lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

From the Department of Radiology and Physical Therapy of the University of Minnesota, the Departments of Roentgenology of the University Hospital and the Minneapolis General Hospital, and the Department of Pathology of the Ancker Hospital, St. Paul.

1. Wangensteen, O. H., and Paine, J. R.: The Early Diagnosis of Acute Intestinal Obstruction with Comments on Pathology and Treatment: With a Report of Successful Decompression of Three Cases of Mechanical Bowel Obstruction by Nasal Catheter Suction Siphonage, West. J. Surg. **40**: 1-17 (Jan.) 1932.

INCIDENCE

The number of recognized cases of intestinal obstruction due to gallstones has been indicated by various authors as ranging from 0.4 per cent to 5 per cent [2] of all cases of bowel obstruction. It may be stated with certainty that the range of frequency suggested is an absolute minimum; the actual incidence will probably always remain the subject of speculation.

The pathogenesis and anatomic connections of internal fistulas have been described in some detail in a previous paper.[3] Gallstones may enter the intestinal tract in one of two ways: through an internal biliary fistula or through the common duct. Erosion through the wall of the gallbladder or other parts of the biliary tract is produced by the necrotizing action of a stone, which process is in turn usually related to biliary obstruction and increased intraluminal tension. Abscess formation with adhesions and final fistula formation permit entrance of the stone into the bowel. Stones large enough to obstruct the bowel almost always enter by means of a true internal biliary fistula.

Cholecystogastric, cholecystoduodenocolic, cholecystojejunal and choledochocolic fistulas are relatively rare and are associated with gallstone obstruction very infrequently.

It has been well established that the most frequent connection of internal biliary fistula due to gallstones is with the duodenum, resulting in a cholecystoduodenal communication. While much is written as to the pathologic nature of such a process, it is rare that we are fortunate enough to encounter the onset of this fistulous formation at the autopsy table. A characteristic example of such an instance is the specimen shown in figures 1 and 2 which was removed at autopsy by Dr. Frank Andrus of the Minneapolis General Hospital, through whose courtesy it is here illustrated. A large stone present in the gallbladder may be seen eroding through the wall of the viscus, which was closely adherent to the first portion of the duodenum. The erosion has already extended into the lumen of the duodenum itself, so that the stone can be made out through the opened duodenum. The mechanism of the development of a fistula between the gallbladder and the first portion of the duodenum is well demonstrated in this specimen.

2. Schwarke, R.: Ueber zweimaligen Gallensteinileus, Zentralbl. f. Chir. **65**: 1980-1985 (Sept. 3) 1938. Wakeley, C. P. B., and Willway, F. W.: Intestinal Obstruction by Gallstones, Brit. J. Surg. **23**: 377-394 (Oct.) 1935.

3. Borman, C. N., and Rigler, L. G.: Spontaneous Internal Biliary Fistula and Gallstone Obstruction, Surgery **1**: 349-378 (March) 1937.

Next in frequency to the cholecystoduodenal type, as a source of gallstone obstruction, is the choledochoduodenal fistula. We have been able to study a patient at autopsy, following accidental death, in whom three stones measuring together 3.5 by 7 cm. had passed through the major portion of the common duct but apparently could not traverse the sphincter itself. As a result an erosion of the wall at the distal portion of the duct into the second portion of the duodenum was actively progressing toward the formation of a choledochoduodenal fistula (fig. 3). The common duct was massively dilated; when the duodenum was opened the duct could be seen invaginated into the bowel. The ampulla is seen to be elevated and appears tightly closed, while erosion of the walls of the common duct and the duodenum, preliminary to the extrusion of these large stones into the intestine, has occurred. This specimen illustrates well the massive size of stone which may pass through the duct into the duodenum and the mechanism whereby this process takes place.

It is notable that while the stone filled the entire duct down to the ampulla, the effort to pass it was being made through an entirely new orifice rather than through the ampulla itself. Microscopic examination of the major papilla and dissection of the ducts by Dr. E. A. Boyden[4] of the department of anatomy revealed the following findings:

The lowest stone, which occupied the distended major papilla, had not entered the short undistended ampulla of Vater but was being held by hypertrophied bands of muscle representing the lowest fibers of the sphincter choledochus—that portion of the sphincter of Oddi which surrounds the intramural segment of the common bile duct. As a result of this obstruction the stones had telescoped the biliary portion of the major papilla until it reached a length of 3.5 cm. In this process the minor papilla had been drawn out onto the major papilla and the narow slit through which the ducts normally enter the duodenum had been enlarged to an oval window 3.2 cm. in diameter. By contrast, the ampulla remained narrow and only a few millimeters in length, and its sphincter was only moderately developed.

Fig. 1.—Specimen removed at autopsy from a patient in whom a cholecystoduodenal fistula was developing; the duodenum opened from behind showing perforation. 1, calculus; 2, perforation of duodenal wall; 3, duodenum; 4, caudate lobe; 5, quadrate lobe.

Whether a stone entering the bowel through the ampulla of the common duct can produce obstruction still remains a matter of conjecture. Wakefield, Vickers and Waters,[5] for example, had never seen such a case. Courvoisier,[6] however, stated that in 7 of 35 cases of gallstone obstruction the route taken by the stone was through the duct itself. In one of these cases the common duct was dilated to the size of the gallbladder and in another a stone 4 inches (10 cm.) in circumference had negotiated the duct and had resulted in obstruction of the bowel. Synder[7] recently reported an unrecognized case of gallstone obstruction in which the cystic and common ducts and the ampulla were all dilated to such an extent that the index finger could easily be passed into the duodenum, yet no true fistula was present. From an examination of the literature it would appear that regurgitation of contrast material through the common duct as a result of a patent ampulla occurs about as frequently as the demonstration of choledochoduodenal and cholecystocolic fistulas. Nevertheless, there is a question as to whether most of the reported cases of communication through the orifice of the common duct are not in fact choledochoduodenal fistulas located near the end of the duct.

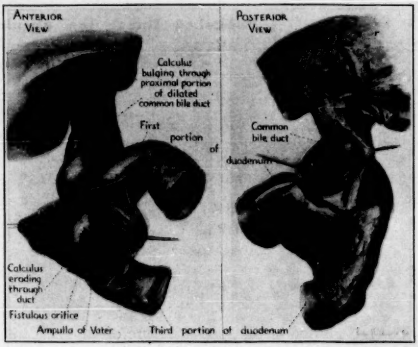

Fig. 3.—Drawing of autopsy specimen taken from a patient in whom a choledochoduodenal fistula was developing from stones in the common duct. The anterior view shows the duodenum opened to exhibit the enormously dilated common duct invaginating into it. Note the ampulla of Vater tightly closed and the erosion in the wall of the duct and duodenum, where the calculus can be seen penetrating through. The posterior view shows the opened duct with the stones within it.

The possibility of error in this regard is well illustrated in figure 4, a case of choledochoduodenal fistula. Barium sulfate given by mouth is shown to extend through an opening between the first portion of the duodenum and the common duct. The distal portion of the duct is also filled with contrast material, but the distal end is tightly closed so that the barium regurgitates into the gallbladder and biliary radicles. If the spontaneous anastomosis itself were not clearly demonstrable here, this case might well have passed for one of regurgitation through the ampulla into the common duct.

4. Boyden, E. A.: Surgery, to be published.

5. Wakefield, E. E.; Vickers, P. M., and Walters, W.: Intestinal Obstruction by Gallstones, Surgery **5**: 670-673 (May) 1939.

6. Courvoisier, L. G.: Casuistisch statistische Beiträge zur Pathologie und Chirurgie der Gallenwege, Leipzig, F. C. W. Vogel, 1890.

7. Synder, L. H.: Unrecognized Gallstone Obstruction of the Intestine, South. M. J. **31**: 1275-1276 (Dec.) 1938.

It can be stated with considerable certainty that most stones producing occlusion enter the small bowel directly from the fundus of the gallbladder. Stones entering the colon directly seldom produce frank obstruction and are usually passed by the rectum. The important feature as concerns the present discussion is that a direct opening is established between the biliary and the intestinal tract. This abnormal connection is vastly important in the detection of the pathologic process that has preceded it since, with the exception of the relatively infrequent primary ulcerating bowel or biliary lesions, gallstones are the essential etiologic factor. Regurgitation of air or barium through the fistula into the biliary radicles permits visualization of the biliary tree because of the contrast between the liver tissue and the bile ducts.

Once a calculus has entered the intestinal tract, obstruction results if the foreign body is too large to pass the lumen of the bowel. Varying degrees of obstruction or intermittent ileus occur owing to irritation of the bowel wall and secondary spasm, even when the stone is not large enough to occlude the lumen completely. The prime factor in obstruction, however, is the presence of the stone, and the further the progress through the small bowel the greater the probability of intestinal occlusion. Only rarely does obstruction occur at as high a level as the duodenum, and in the majority of instances the terminal ileum is the final site of impaction.[9] Naturally, the exact situation of the impaction depends, in large measure, on the size of the stone. In spite of isolated reports of unusually large stones being passed spontaneously, most writers on the subject agree[10] that a stone measuring more than 25 mm. in diameter is not likely to pass through the small bowel without producing symptoms. The physical characteristics of the stone, as well as its size, require consideration, since a small stone with sharp edges can produce local irritation to the bowel wall and obstruction may be the result of spasm alone.[3] In a case reported by Hinchey,[11] the first stone which was passed spontaneously was of greater weight and diameter than the second, which caused obstruction. The finding of a faceted stone implies the distinct possibility of the presence of a second stone, for which a search should be made. Recurrent obstruction due to a second stone during immediate convalescence has been reported in 7 instances, according to Hinchey;[11] Schmutzler,[12] who has likewise stressed the significance of finding a faceted stone, removed a second stone during the same operation but only after exploring the bowel above the site of the first stone.

CLINICAL CHARACTERISTICS

The clinical features of gallstone ileus have contributed little to the exact diagnosis. On the contrary, they are almost always misleading, and the confusing picture so frequently presented throws the burden of proof onto a more exacting method of diagnosis. Probably 75 per cent of the patients are women over 60 years of age. A certain percentage present a long history of intermittent gallbladder attacks preceding the acute phase, but the antecedent history of others is devoid of biliary implication. The symptoms produced by the presence of the stone in the bowel prior to complete obstruction are of such character that they mask the picture. Some of the difficulties encountered in the clinical consideration of such patients are well demonstrated in the cases reported here.

ROENTGEN DIAGNOSIS

In a review of the literature previous to the year 1935 we were able to find but 7 cases of gallstone obstruction which had been diagnosed preoperatively by means of roentgen examination.[3] Since that time we have found reports of 24 cases, including those previously reported by us, that have been diagnosed gallstone ileus and wherein the roentgen appearance was the main factor in the specificity of the diagnosis. Nevertheless numerous reports still appear, even at the present date, wherein the nature of the obstructing

Fig. 4.—Spontaneous internal biliary fistula demonstrated by barium meal. 1, stomach; 2, anastomosis between common duct and duodenum; 3, common duct; 4, closed distal end of duct; 5, cystic duct; 6, gallbladder; 7 hepatic ducts; 8, gas in hepatic duct.

lesion has only rarely[13] or even never[14] been determined before operation and wherein roentgen examination if employed at all has been confined largely to a "flat plate" of the abdomen for the purpose of confirming the diagnosis of intestinal obstruction.

The influence of roentgen examination, not only on the exact diagnosis in gallstone obstruction but on the accompanying mortality, is exemplified in a report by Petren[15] from the University of Lund in Sweden. In

9. Adamesteanu, C., and Dimitrui, C.: Gallensteinileus in Verbindung mit Darminvagination, Zentralbl. f. Chir. **66**: 2112-2116 (Sept. 23) 1939.
10. Kommerell, Burkhard, and Engel, Rudolf: Zur Diagnose des Gallensteinileus, Klin. Wchnschr. **17**: 1680-1684 (Nov. 26) 1938.
11. Hinchey, P. R.: Recurrent Gallstone Ileus, New England J. Med. **223**: 174-179 (Aug. 1) 1940.
12. Schmutzler, E.: Gallensteinileus und Röntgenbild, Zentralbl. f. Chir. **65**: 1195-1200 (May 21) 1938.
13. Balch, F. G.: Gallstone Ileus, New England J. Med. **218**: 457-462 (March 17) 1938. Dulin, J. W., and Peterson, F. R.: Intestinal Obstruction Due to Gallstones, Arch. Surg. **38**: 351-357 (Feb.) 1939. Dean.[17]
14. Flynn, J. M.: Intestinal Obstruction at Terminal Ileum Caused by a Large Irregular Gallstone, Am. J. Roentgenol. **44**: 69-70 (July) 1940. Matuschek, Bela: Ueber Darmverschluss durch Gallensteine, Beitr. z. klin. chir. **169**: 129-135, 1939. Schwarke.[3]
15. Petren, Gustaf: Ueber Gallensteinileus, unter besonderer Berücksichtigung seiner Röntgendiagnostik, Chirurg **11**: 278-291 (April 15) 1939.

all 7 cases observed from 1910 to 1924 the result was postoperative fatality. From 1928 to 1939 7 cases were encountered in all of which the roentgen examination was the important feature of the diagnosis and there was only 1 death. The early determination of the probable need for surgical intervention results in the treatment of choice in most cases, namely prompt operation. As already mentioned, not only is early specific diagnosis of gallstone ileus quickly reflected in the mortality from this disease but it is of great significance in determining what part, if any, suction decompression should play in its management.

Although Wangensteen[16] stated that in some instances suction will accomplish decompression and permit extrusion of the stone, he warned against the danger of procrastinating in the case of obstruction due

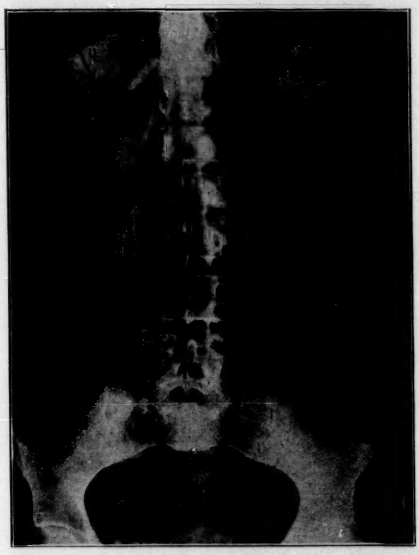

Fig. 5 (case 1).—Roentgenogram of abdomen in supine position. 1, dilated gas filled loops of small bowel; 2, gas in stomach; 3, gas in gallbladder; 4, gas in biliary ducts. The combination of signs of intestinal obstruction with evidences of internal biliary fistula, as shown by the gas in the biliary tract, made the diagnosis of gallstone obstruction possible.

to gallstones. Persistence of intestinal distention as revealed by roentgen examination after a trial with suction indicates the necessity for operation at the earliest possible moment. Many surgeons believe that immediate operation should be done without any particular trial of suction and, at this time, Wangensteen is also of this opinion. Accordingly, if the diagnosis of gallstone ileus is specified, there are well defined limits for the use of suction; in most instances prompt surgical intervention before damage to the bowel wall and its sequelae have appeared is the best procedure.

16. Wangensteen, O. H.: The Therapeutic Problem in Bowel Obstruction: A Physiological and Clinical Consideration, Springfield, Ill., Charles C. Thomas, Publisher, 1937.

ROENTGEN SIGNS

The roentgen examination in cases of intestinal obstruction from a gallstone may reveal any or all of the following signs:

1. Air or contrast medium in the biliary tract.
2. Direct visualization of the stone or indirect visualization of the stone by means of contrast medium in the intestine.
3. Change in position of a previously observed stone.
4. The roentgen evidences of partial or complete intestinal obstruction.

The recognition of air or contrast medium in the biliary system will, in our opinion, indicate the nature of the obstructing lesion in a higher percentage of cases than by any other single sign. In 2 cases of gallstone obstruction previously reported by us,[8] this was the first direct roentgen sign noted; in Petren's series,[15] in 6 of the last 7 cases wherein the exact diagnosis had been made by roentgen examination, the biliary radicles were visualized. In the literature in 22 of 36 cases of gallstone obstruction in which roentgen examination had been made, the biliary radicles were visible in the roentgenogram. Not infrequently this sign was present on the preoperative films but was not identified or recognized until after operation. Gallstones that have entered the gastrointestinal tract and which are large enough to produce obstruction practically always leave a pathway behind them permitting reflux of intestinal content. Obviously reflux of gas is the common sign found, as the administration of contrast substances, such as barium sulfate, is usually contraindicated.

Films made in both the anteroposterior and posteroanterior projections, centered over the right upper quadrant, are of greater value in eliciting this sign than are films centered over the midabdomen. The fact that no other special procedure is necessary for the demonstration of gas in the bile ducts adds greatly to the value of the finding. Usually the lower portion of the biliary tree alone is visible, and therefore the relationship of the linear or circumscribed markings to the duodenal loop is particularly important. A classic example of the roentgen findings in a spontaneous internal biliary fistula, without intestinal obstruction, has already been illustrated in figure 4. The hepatic duct and its branches are filled with gas as well as barium. Another illustration of contrast medium in the biliary tract in association with obstruction is shown in figure 8, while gas alone in the biliary tract is shown in figures 5, 6 and 7.

Because a biliary fistula tends to obliterate itself by scar formation, the absence of air in the bile ducts cannot be considered as completely eliminating the possibility of gallstone obstruction.

Regurgitation of contrast material through what has been termed "an incompetent common duct sphincter" has been observed in the presence of a stone lodged in the lower end of the common duct, and in a case of carcinomatous metastasis producing a high jejunal obstruction.[18] However, the proof of an incompetent sphincter and the absence of a fistula has not been offered. Åkerlund[19] and Case[20] have demonstrated

18. McArthur, L. L.: Repair of the Common Bile Duct, Tr. Am. S. A. **41**: 1-18, 1923. Venables, J. F., and Briggs, P. J.: Visualization of Bile Ducts After an Opaque Meal, Guy's Hosp. Rep. **79**: 123-126 (Jan.) 1929.

19. Åkerlund, Åke: Duodenaldivertikel und gleichzeitige Erweiterung des Vaterschen divertikels bei einem Fall von Pankreatitis, Fortschr. a. d. Geb. d. Röntgenstrahlen **25**: 540, 1919.

20. Case, J. T.: Roentgen Observation on the Duodenum with Special Reference to the Lesions Beyond the First Portion, Am. J. Roentgenol. **3**: 314-326 (June) 1916.

barium in the distal ends of the ducts in cases of chronic pancreatitis. Indurating, usually malignant lesions adjacent to the common duct are known to have permitted reflux.[21] Emphysematous cholecystitis and cholangitis incident to infections of the biliary tract with gas forming organisms [22] may rarely produce gas in the ducts. With these possible and rare exceptions the presence of contrast material or gas in the biliary tract is synonymous with fistula formation. Accordingly, the demonstration of air or barium in the bile ducts in association with intestinal obstruction (fig. 5) practically excludes any consideration other than occlusion from a gallstone.

In a certain percentage of cases, especially when clinical signs point to the possibility of gallstone ileus and when careful search is made, the stone will be directly seen in the roentgenogram of the abdomen (fig. 7). Unless considerable calcification and lamellation are present, the calculus may well escape detection, especially when the obstruction has resulted in fluid and gaseous distention of the bowel. Similarly, in such instances, the administration of barium as an aid in detection is not a recommended procedure, although it may occasionally be given in error, as in case 4. As already indicated, biliary calculi are most likely to be found in the region of the terminal ileum. The posteroanterior projection is the position of choice. In our experience, when the stone shadow is apparent the bile ducts are usually also seen, while the contrary is not true. The determination, before surgical exploration, of the quadrant occupied by the stone and its relative position in the small intestine facilitates removal with a minimum of trauma.

The disappearance of previously demonstrated gallstones or, more especially, detection of the same shadows of gallstones in the lower part of the abdomen following previous observation in the right upper quadrant is of distinct diagnostic value. However, the utilization of this sequence of events must be considered unusual as well as fortunate. In 1 of our previously reported cases our suspicion was first aroused by the failure to see a group of stones which had been quite evident during a previous examination. A similar finding was obtained in case 4 of this series. The presence of a demonstrable stone in the gallbladder which is faceted but without a sister stone may be sufficient to arouse suspicion, but it is only suggestive. Such a situation is illustrated in case 2 (fig. 6).

The roentgen evidences of intestinal obstruction are obviously also to be found. It should be noted, however, that characteristic distention of loops of the small bowel may not be demonstrable because the obstruction may be partial or intermittent. In most cases, however, the classic distention of several loops of the small bowel with gas, the unusual visibility of the small intestinal segments and the relative absence of gas in the colon may be observed. Careful study of the films will reveal the presence of the normal peritoneal markings and the absence of any free gas or fluid in the peritoneal cavity; such findings tend to militate against the diagnosis of peritonitis.

Sosman [22a] has suggested that the perforation of a duodenal ulcer into the gallbladder, when accompanied by paralytic ileus, may produce roentgen findings closely simulating those of gallstone obstruction. We have never encountered this problem.

For the purposes of this study 404 cases of intestinal obstruction of all types were reviewed. Among these there were 11 cases of undoubted gallstone obstruction in 10 of which a reasonably adequate roentgen examination of the abdomen had been made. In addition, we have observed 4 other cases of proved gallstone obstruction. In all of the 14 cases examined there were reasonably good roentgen signs of intestinal obstruction; in all but 1 there were evidences of gas or contrast medium in the biliary tract (figs. 5 and 6). The calculus was directly demonstrable (fig. 7) in 4 cases and showed a change in position from its previously known site in 2 cases. In 1 case the calculus produced a defect in the barium-filled intestinal shadow

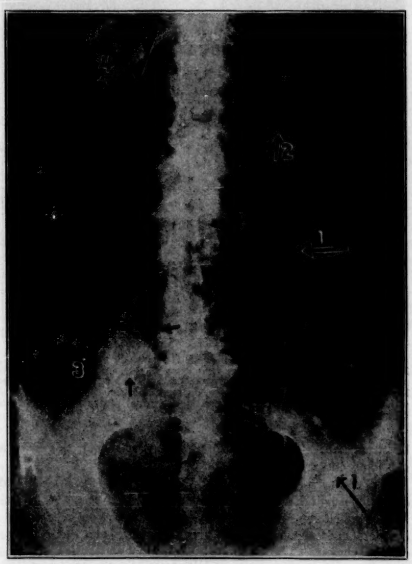

Fig. 6 (case 2).—Roentgenogram of abdomen in supine position, 1, dilated loops of intestine filled with gas; 2, gas in the stomach; 3, shadow of impacted stone with facet on upper surface (this was not observed before operation); 4, faceted stone in gallbladder with gas above it, extending into biliary ducts. Presence of gas in the biliary tract, the remaining faceted stone in the gallbladder and evidences of intestinal obstruction permitted the exact diagnosis of gallstone obstruction.

(fig. 8). In 2 cases additional stones were visible in the gallbladder. It should be noted that the diagnosis was not made in all these cases from the roentgen examination, but the failure to make the correct diagnosis was not due to the absence of the signs in the roentgenogram but rather to failure to detect the signs because of unfamiliarity with the syndrome.

REPORT OF CASES

In order to illustrate the characteristic features of this condition 4 cases from this group are reported in some detail:

CASE 2.—A woman aged 62 was admitted to the University Hospital complaining of abdominal crampy pains, nausea and vomiting of two days' duration. The pain began in the mid-

21. Rees, C. E.: Duodenocolic Fistula with Incompetent Sphincter of Oddi, J. A. M. A. **100**: 496-497 (Feb. 18) 1933.
22. Berg, H. H.: Zur Strahlendiagnostik der Leber, Ztschr. f. klin. Med. **135**: 562-571, 1939. Schmidt, E. A.: Emphysematous Cholecystitis and Pericholecystitis, Radiology **31**: 423-427 (Oct.) 1938.
22a. Sosman, M. C.: Personal communication to the authors.

abdomen, radiated indefinitely to the back and was associated with nausea and vomiting. There had been no bowel movements for three days. In the past twelve hours, however, her condition had improved considerably, and the pain had disappeared.

Physical examination on admission revealed little evidence of distention, tenderness or spasm and no bowel sounds could

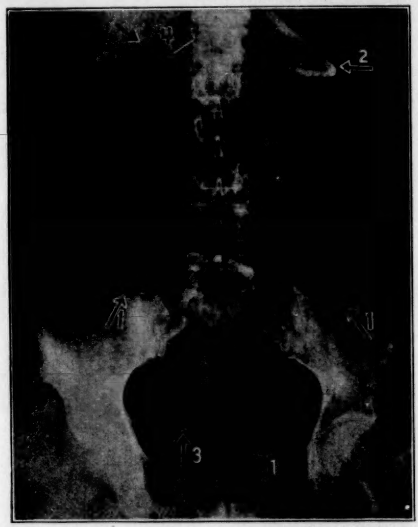

Fig. 7 (case 3).—Roentgenogram of abdomen in supine position. 1, loops of small bowel distended with gas; 2, gas and suction tube in stomach; 3, laminated dense shadow characteristic of gallstone in right lower quadrant; 4, gas in biliary ducts. The stone is here directly visualized together with the evidences of intestinal obstruction and of an internal biliary fistula.

be made out. The clinical impression was that this was a subsiding cholecystitis.

The roentgen examination of the abdomen (fig. 6) showed only two small loops of bowel distended with gas. A typical faceted gallstone could be made out in the region of the gallbladder, and above this an area characteristic of gas was clearly shown. The finding of intestinal distention, faceted gallstone and the presence of gas in the gallbladder led to a definite diagnosis of gallstone obstruction.

Shortly after this some evidence of extrarenal uremia appeared, duodenal suction was started and surgical exploration was undertaken by Dr. O. H. Wangensteen.

When the abdomen was opened a gallstone 3.5 by 3.5 by 3 cm., smoothly faceted at each end, was found in the ileum on the right side of the abdomen. This was removed by enterotomy and the intestine closed.

Reexamination with roentgenograms of the abdomen two weeks after the operation showed the gallstone previously observed in the gallbladder to have disappeared. Although the stools were examined, this stone was never recovered, but repeated roentgen examinations thereafter indicated that it undoubtedly had passed during convalescence.

The deceptive character of the symptoms of this patient is illustrated by the fact that she was seen by two members of the resident staff on her entrance, neither of whom thought that she had intestinal obstruction or any illness of serious consequence. Yet on roentgen examination the exact diagnosis of gallstone obstruction could be made from the first film, despite the absence of any very remarkable distention of the small bowel. It is notable that in the last twelve hours before entrance the patient had become distinctly better. This is typical of many cases of gallstone obstruction and is one of the characteristics of the symptomatology of this condition.

The single roentgenogram of the abdomen (fig. 6) revealed the evidences of intestinal obstruction, the remaining stone in the gallbladder and gas in the biliary tract. Careful study of the film after the operation revealed the large impacted stone in the ileum. This shadow, however, was so faint that it probably could not have been recognized without certain knowledge of its presence. The facet on its superior surface could also be identified.

The disappearance of the stone remaining in the gallbladder without any evidence of it becoming obvious by the patient's condition indicates the ease with which smaller stones may be passed.

Case 3.—A woman aged 75 was admitted to St. Andrew's Hospital complaining of pain in the right upper quadrant, abdominal colic and vomiting, all of which had been present for one week. The past history was of no significance. The physical examination suggested dynamic intestinal obstruction.

With the latter in mind, we performed duodenal suction and instituted intravenous administration of chlorides, with good symptomatic relief.

Fig. 8 (case 4).—Roentgenogram of abdomen in prone position, following administration of barium enema and barium meal. 1, barium in the stomach; 2, barium in the colon; 3, gas in distended loops of small bowel; 4, barium in severely distended loops of small bowel; 5, barium and gas extending into biliary ducts from fistula; 6, barium surrounding gallstone in small bowel. In this instance the diagnosis of gallstone obstruction could be made from the direct evidence of an internal biliary fistula, direct evidence of intestinal obstruction and the indirect visualization of the stone itself.

A simple roentgenogram of the abdomen with the patient supine was made at the bedside two days later. This revealed distended loops of small bowel, a laminated dense shadow in the left side of the pelvis resembling a gallstone and a few

areas of lessened density over the liver, indicating gas in the biliary ducts. Reexamination the following day (fig. 7) exhibited the same conditions except that the gallstone had moved somewhat to the right.

Abdominal exploration was carried out by Dr. Charles Hallberg. Near the distal portion of the ileum was found a gallstone measuring 3 cm. in diameter completely occluding the bowel. The mucosa was ulcerated and perforation was impending. The calculus was removed by enterotomy and the patient made an uneventful recovery.

This case presents three of the roentgen signs of gallstone obstruction, namely gas in the biliary ducts, visible gallstone in the lower part of the abdomen and signs of intestinal obstruction. Not only was the exact diagnosis established by roentgen examination but the position of the stone was localized, permitting a surgical approach with a minimum of effort. From the appearance of the bowel it seemed clear that perforation might have occurred if surgical therapy had been further delayed.

CASE 4.—A woman aged 70 was admitted to the University Hospital following a minor accident. She had had a long history of cholecystitis and cholelithiasis; there were various other complaints over a period of many years, none of which were closely related to the present condition. Roentgen examination six years earlier had revealed multiple large stones in the gallbladder.

About three weeks before entrance the patient had had an accident and injured her back. Roentgen examinations of the spine and pelvis gave essentially negative results. She came in at this time complaining of pain in the back for which she was kept under observation. There were also evidences of mental deterioration. Two days later she complained of abdominal pain and had some vomiting, but for the next two days the patient was fairly comfortable. On the day of the operation there was some tenderness in the abdomen and the patient was complaining of nausea and distention. Because of the numerous complaints which she had made in the past, the history of accident and her mental state, the clinical impression was that there was no real pathologic condition of the abdomen.

Intestinal obstruction was not considered, but because of the possibility of some lesion of the digestive tract roentgen examination of the colon with a barium enema and of the gastrointestinal tract with barium meal was undertaken. A significant distention of the loops of small bowel was observed (fig. 8) and within a loop of the ileum a defect was apparent. The shadow of the gallstone was no longer visible in the right upper quadrant. The extension of the barium into a fistula communicating with the biliary tract and some gas in the biliary ducts served to demonstrate conclusively the entire diagnosis, namely gallstone obstruction, with a large stone in the bowel surrounded by barium and an internal biliary fistula.

Surgical exploration of the abdomen was undertaken and the distended loops of small bowel were demonstrated. A stone measuring 3.5 by 3 by 3 cm., one surface of which was smoothly faceted, was found about 20 cm. from the ileocecal valve, where it was impacted. It was removed by enterotomy, the small bowel was closed and the patient made an uneventful recovery.

This case was extraordinary in view of the high degree of obstruction despite symptoms which were insufficient to indicate a serious clinical condition. The giving of barium was, of course, an error, although in this instance it apparently produced no ill results. The demonstration of a gallstone as a defect in the barium shadow is illustrated in this particular case. In addition there were the disappearance of previously observed shadows of stones in the gallbladder area, the presence of barium in the internal biliary fistula, gas in the bile ducts and roentgen evidences of intestinal obstruction

SUMMARY

1. Two cases were observed at autopsy in which the manner of development of a choledochoduodenal and a cholecystoduodenal fistula could be demonstrated.

2. The specific signs which permit a roentgenoiogic diagnosis of this condition are evidences of dynamic ileus, presence of gas or contrast medium in the biliary tract and direct or indirect visualization of the calculus.

3. In 13 of 14 cases of gallstone obstruction in which roentgen examination was made, the exact diagnosis could have been made from the roentgenograms alone.

4. It is important to recognize the exact nature of an obstructing lesion of the bowel in order to determine whether suction therapy or immediate surgery should be undertaken.

5. Because gallstone obstruction is an indication for immediate intervention, every effort should be made to recognize its characteristic roentgen signs.

ABSTRACT OF DISCUSSION

DR. JAMES T. CASE, Chicago: I have always been skeptical about gallstones passing through the natural channels. I have seen undoubted gallstones that patients claimed had passed and I have always insisted that they must have passed through some spontaneous fistula. I have had several personal cases in which gallstones were passed through fistulous openings later demonstrated in the opened abdomen. I am glad to note that Drs. Rigler, Borman and Noble voice an objection to the general unselected use of suction therapy. I think I see a tendency to employ that method in all cases of ileus, whereas there are conditions in which it should not be used. The method of passage of the stone from the gallbladder into the lumen of the digestive tube has been strikingly illustrated by the authors. There are 2 of my cases of special interest in which a gallstone passed in this manner. In 1 the stone passed from the gallbladder into the stomach, and the calculus was so large that it could not get through the pylorus. It was recognized on my gastrointestinal study as a foreign body free in the stomach, and operation showed that it was a gallstone and that it had passed into the stomach through a spontaneous cholecystogastrostomy. In the other one a gastroenterostomy had been performed previously. A spontaneous cholecystocolostomy and a spontaneous cholecystoduodenostomy occurred, and a gallstone which lay in the duodenum was found when an operation was performed later. In the study of suspected acute intestinal obstruction we should not be content to depend on the gas shadows in the intestine to the exclusion of the use of opaque materials. I know that there are many who feel that it is objectionable to introduce barium or bismuth in any form into the digestive tube in the presence of suspected obstruction. But there is now available a means which I myself have employed for a number of years; namely, the oral administration of the aqueous solution of thorium dioxide, which can be given to any patient without any fear of complications. It will enable one to visualize safely the small intestine even in the face of obstruction. Within four hours one can get good visualization, especially if it is given very cold and if the patient is kept recumbent on the right side in bed to facilitate the evacuation of stomach contents.

DR. LEO G. RIGLER, Minneapolis: There is no doubt, as Dr. Case said, that stones will pass through the intestinal tract without interference, but the risk in waiting for them to pass spontaneously is so great that it should not be undertaken. I should like to reemphasize that the history in gallstone obstruction is very often unreliable. The combination of signs that I have described and with which every one, I am sure, is familiar, namely gas in the biliary ducts plus the evidences of intestinal obstruction, is practically specific regardless of whether or not the stone can be seen. In our experience it is much more specific and much more reliable than either the history or the physical findings in this particular type of intestinal obstruction.

ANESTHESIA FOR SURGERY ABOUT THE HEAD

URBAN H. EVERSOLE, M.D.
BOSTON

This discussion is not intended as an exhaustive treatment of the subject of anesthesia for surgery about the head but rather as a discussion of some of the technical problems with which the anesthesiologist is confronted when an operation is to be performed in this region of the body. In addition, a detailed description of two methods of administering anesthesia for surgery about the head is to be presented. These methods have been developed in an attempt to meet certain requirements which are important and to overcome some of the difficulties that are frequently encountered during the course of anesthesia for operations in this region of the body.

There are many factors that the anesthesiologist must consider if he is to select the proper anesthetic agent and method of its administration for any type of surgery. Some of these factors have a peculiar significance when the operation is to be performed in the region of the head. Some of the more important of these may be considered under one of the following heads: (1) proper preparation of the patient for operation, (2) selection of the proper agent, (3) employment of a method of administering this agent that will insure an adequate and unobstructed airway at all times, (4) facilities readily available for the treatment of respiratory and circulatory depression, (5) an anesthetic technic which will in no way hamper the work of the surgeon, (6) precautions against explosion when inflammable anesthetic agents are being used and (7) adequate protection for the patients' eyes.

Since this discussion deals primarily with the technical management of anesthesia for operations about the head, no detailed consideration will be given to the preparation of the patient for operation. Obviously, there should be an adequate preoperative general physical examination, with a careful estimation of the surgical risk. Not only the choice of anesthesia but often the choice and magnitude of the operation is affected by a proper appreciation of the hazards which may be presented by the patient's condition. In addition, adequate preoperative treatment will often favorably affect certain serious physical conditions which may be present.

Essentially the same rules apply to the selection of preoperative medication for patients who are to have some type of operation about the head as apply when the operation is to be performed in any other part of the body. Proper attention should be paid to drug idiosyncrasies, age, sex and the physical condition of the patient. It must be borne in mind that the respiratory mechanism may be seriously upset in patients who have increased intracranial pressure or in any patient during the course of intracranial surgery. For this reason, any drug which may cause respiratory depression should be used cautiously in patients with increased intracranial pressure or on whom any type of intracranial operation is to be performed.

In the selection of the proper anesthetic agent for any type of surgical procedure, the question of adequate oxygen, as well as the explosion hazard, must be considered. Unsupplemented nitrous oxide and oxygen is the only commonly used inhalation anesthetic mixture that is entirely noninflammable. Since nitrous oxide is such a weak anesthetic agent that it does not permit the administration of sufficient oxygen to allow for the maintenance of anesthesia without some degree of anoxia, this agent is seldom used unsupplemented. Of course, the addition of ether or cyclopropane as a supplemental agent makes the mixture inflammable. Ethylene shares with cyclopropane and ether the property of being explosive and, in addition, shares with nitrous oxide the property of being so weak as not to permit the administration of sufficient oxygen with it to guarantee freedom from anoxia at all times. Both ether and cyclopropane are sufficiently potent as anesthetic agents to permit the administration of oxygen in amounts large enough to insure adequate oxygen, regardless of the depth of anesthesia. It therefore becomes quite evident that safeguards against an explosion in the operating room when an inhalation anesthetic is being used take on the nature of precautions rather than the use of nonexplosive agents. The danger of explosion is greatly increased when the surgeon uses a high frequency electrosurgical unit for removal of tissue or for coagulating bleeding vessels. High frequency currents may cause induced electrical charges to be built up on other pieces of apparatus or on the patient with the consequent danger of a spark, in addition to the obvious point of danger where the cutting or coagulating point comes in contact with the tissue. The only danger that is presented by the low voltage actual cautery is that of the glowing end of the cautery itself. The low voltage actual cautery or the high frequency coagulating apparatus should not be used in or around the mouth when inflammable anesthetics are being used. In addition, the high frequency apparatus should not be used at all if cyclopropane or ether vapor and oxygen is being administered, as with the carbon dioxide absorption technic. When any type of electrosurgical apparatus or cautery is to be used, ether vapor and air is probably much safer than ether vapor and oxygen and is certainly safer than cyclopropane and oxygen. Experiments done by Dr. J. W. King of the Massachusetts Institute of Technology have shown that no mixture of ether and air will explode with the violence that some mixtures of ether and oxygen do. Neither will any mixture of ether and air explode with the violence that all explosive mixtures of cyclopropane and oxygen will.[1] In addition, further precautions should be taken, such as placing a screen between all anesthetic connections and the operative field, and the delivery of the exhaled gases at a point several feet from the site of operation. Even though ether vapor and air is less explosive than ether vapor and oxygen, this must not be taken to indicate that this mixture is entirely free from the hazard of explosion.

One of the shorter acting barbiturates such as pentothal or evipal administered intravenously is quite satisfactory for operations that will probably not exceed thirty minutes in length. Obviously, the use of this method of anesthesia eliminates all the dangers of explosion.

One of the most important factors to be considered in the management of any type of anesthesia is the maintenance of an adequate and unobstructed airway at all times. This is particularly important for any type of surgery about the head. For this reason an endotracheal tube should be in place before any extensive surgery is begun in this region of the body. However, the mere presence of an endotracheal tube is not in

From the Department of Anesthesia, the Lahey Clinic.
Read before the Section on Anesthesiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. King, J. W.: Personal communication to the author.

itself a guaranty that the patient will have an adequate respiratory exchange. A method of administration should be employed that will not only permit the anesthetist to observe the depth and character of the patient's respirations but also enable him to render effective treatment should any marked degree of respiratory

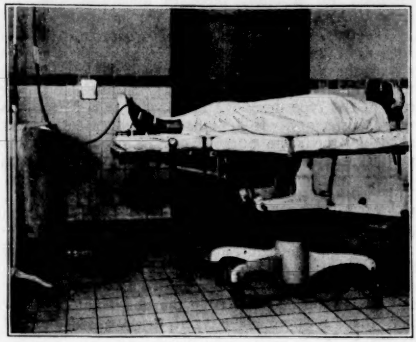

Fig. 1.—Patient with apparatus in position for administration of intermittent intravenous anesthesia, with nasal endotracheal tube in place.

depression become manifest. During the course of intracranial surgery, particularly in the posterior fossa, marked disturbances of respiration are not at all uncommon. The anesthetist must be on the alert for signs of disturbed respiration and should have facilities immediately available to carry out artificial respiration for an indefinite length of time should it be necessary.

The problem of circulatory depression presented by patients on whom operations about the head are performed in no way differs from the problem of circulatory depression presented when an operation is performed in any other region of the body. When a long or shocking surgical procedure is anticipated, or if during the course of any surgical procedure there is considerable blood loss or evidence of impending shock, a continuous intravenous drip of fluid should be started. This affords a means of replacing fluid and is also a route for the administration of blood should a transfusion be necessary. In the actual treatment of shock there is no fluid that is as valuable as whole blood. If this is not immediately available, a 5 or 10 per cent solution of dextrose in distilled water may be used. The use of physiologic solution of sodium chloride in the treatment of low blood pressure and shock is probably of only transitory value. Adrenergic drugs such as epinephrine, neosynephrin, ephedrine and pitressin are occasionally indicated. At best their action is only temporary and they should be used only in an emergency to support a failing circulation until intravenous fluid and transfusion can be instituted.

Another important factor which may easily be neglected in the management of patients on whom operations in the region of the head and face are performed is the protection of the eyes. A serious keratitis which may even result in an opacity of the cornea may develop from an injury to the eye during an operation. Extreme care should be taken to prevent irritating agents such as iodine and alcohol from getting in the eyes. Furthermore, safeguards should be taken to prevent drapes from being forced down against the eyeball. Even in the absence of an irritating agent, if an eye is left open during the course of an operation a rather serious keratitis may develop as a result of the drying of the cornea. If the draping is such that the anesthetist cannot readily see the eyes at all times, they may be protected by filling them with boric acid ointment and covering with gutta percha which is molded firmly into position by means of a sponge soaked in hot water. This is an excellent method for the protection of the eyes of patients suffering from exophthalmos.

A fundamental principle which should guide the anesthesiologist in planning anesthesia for any type of operation is that he should so devise and place his apparatus that it in no way hampers the work of the surgeon. It should be an almost invariable rule that the surgeon should not have to modify his technic or hamper himself for room to work in order that the anesthetist may use a particular piece of apparatus. Anesthesia is sufficiently flexible and there is available a large enough variety of drugs and methods to enable an anesthesiologist, even without an unusual amount of ingenuity, to devise methods whereby he can safely and adequately maintain anesthesia for an almost unlimited length of time without, so to speak, getting in the surgeon's way.

In view of some of the technical problems mentioned earlier in this discussion, anesthesia for surgery about the head can be roughly classified under three main heads: (1) operations of short duration (thirty minutes or less) in which the development of any degree of respiratory difficulty is quite unlikely, (2) operations of longer duration during which the surgeon will not use any type of high frequency surgical apparatus or the actual cautery and (3) operations of longer duration during which either the actual cautery or some type of high frequency coagulating apparatus may be used.

For surgical procedures which are superficial and will probably not require more than thirty minutes to complete, one of the shorter acting intravenous barbiturates, such as pentothal or evipal, has proved quite satisfactory. These may be administered in a 5 per cent solution or, as suggested by Lundy and his associates,[2] a 2.5 per cent solution offers less chance of delayed phlebitis or, if some of the solution is inadevertently injected outside the vein, there is less danger of severe tissue reaction. The apparatus described by

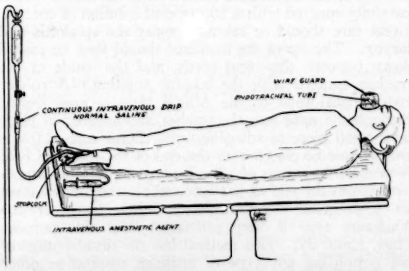

Fig. 2.—Diagrammatic sketch of apparatus shown in figure 1.

Nicholson and Sise [3] for the administration of intravenous anesthetic agents has been quite satisfactory and has the advantage of being simple and inexpensive.

2. Lundy, J. S.; Tuohy, E. B., Adams, R. C., and Mousel, L. H.: Annual Report for 1938 of the Section on Anesthesia: Including Data on Blood Transfusion, Proc. Staff Meet., Mayo Clin. **14**: 273-284 (May 3) 1939.

3. Nicholson, M. J., and Sise, L. F.: Pentothal Sodium Anesthesia for Encephalography, New England J. Med. **222**: 994-996 (June 13) 1940.

This apparatus consists of a thick walled rubber tube, about 1 foot in length, with a stopcock and glass adapter on one end for the needle and a metal adapter for the syringe on the other end. The needle can be placed directly in the vein or, if an intravenous drip apparatus is already in place, it may be shunted into the system by means of a Y connection. It should be borne in mind

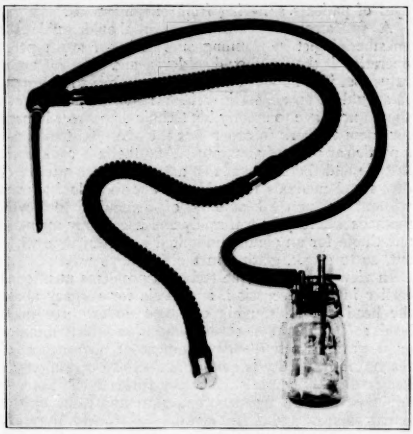

Fig. 3.—Apparatus for the administration endotracheally of ether vapor and air. Note respiratory indicator over end of exhalation tube. Ether chamber illustrated is a Richardson bottle.

that a precipitate may be formed if pentothal is added to dextrose solution. If this drug is to be added to an intravenous drip, the intravenous fluid should be physiologic solution of sodium chloride.

Except for short procedures (ten minutes or less) an endotracheal tube should be inserted when intravenous anesthesia is employed for surgery about the head. The patient is first anesthetized with a small amount of the barbiturate solution and the throat is then carefully sprayed with a 10 per cent solution of cocaine. Great care should be taken to spray the epiglottis and larynx. The tip of the atomizer should then be passed down between the vocal cords, and the inside of the trachea sprayed with the cocaine solution. A rubber endotracheal tube of the Magill type is now passed through the nose into the trachea and secured in place by a small piece of adhesive tape. Some sort of frame should now be placed over the end of the tube and held in position by means of adhesive tape to hold the drapes away from the end of the tube, where they might form an obstruction. An ordinary ether mask of the Yankauer type is very satisfactory for this purpose (figs. 1 and 2). This method has the disadvantage of not permitting any type of artificial respiration other than manual pressure on the chest wall and for this reason should not be employed when respiratory difficulties are anticipated. On the other hand, this method does have the advantage of not presenting any explosion hazard.

For longer operations, during which the surgeon will not use any type of high frequency electrical apparatus or cautery, cyclopropane or cyclopropane in combination with ether or ethylene administered by the carbon dioxide absorption technic is preferable. With the use of a circle type filter for carbon dioxide absorption the inhalation and exhalation tubes may be extended as far as desired, in order to allow the anesthetist to keep well away from the operative field, without any danger of building up a carbon dioxide concentration that would be harmful to the patient. In addition, there is no necessity for a bulky piece of apparatus near the patient's head which might be in the surgeon's way.

When this method is used it is desirable to have a snug fit of the endotracheal tube into the trachea so that all of the patient's respirations will be carried out through the tube. For this purpose an inflatable rubber cuff of the type described by Guedel and Waters [4] is very satisfactory. If an inflatable rubber cuff is not available, the same purpose can be accomplished by packing moist gauze which has been impregnated with surgical lubricant tightly around the endotracheal tube. This method has the disadvantage of increasing the hazard of aspiration of vomitus, should the patient vomit while the apparatus is in place.

For longer procedures during the course of which the surgeon is likely to use some type of high frequency electrical apparatus or the actual cautery, ether vapor and air is probably safer from the standpoint of explosion than cyclopropane-oxygen or ether vapor and oxygen.[1]

For the administration of ether vapor and air, over long periods of time, a semiopen type of apparatus may be used. The objectives in mind when this apparatus was designed were (1) an adequate airway at all times, (2) ether vapor mixed with air, (3) delivery of the exhaled gases at a point several feet away from the site of operation, (4) elimination of all danger of building up increased pressure in the lungs and (5) a method affording a simple and easy way of administering artificial respiration. This apparatus consists of (1) a source of compressed air, (2) a chamber for the vaporization of ether, (3) rubber tubing at least ½ inch in diameter

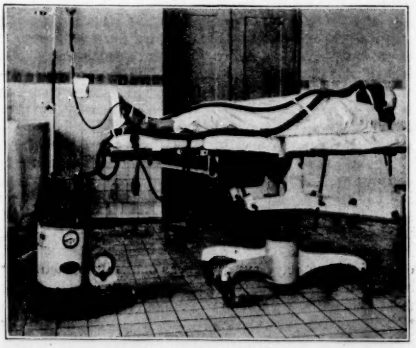

Fig. 4.—Patient with apparatus in place for the administration endotracheally of ether vapor and air. Ether chanmber illustrated is a Connell anesthetometer. Note respiratory indicator over end of exhalation tube and intravenous drip for the administration of fluid.

and long enough to reach from the patient's head to the ether vaporizer at the foot of the table, for the delivery of the ether vapor laden air to the patient, (4) a V shaped connection for attachment of the inhaling and exhaling tubes to the hilt of the endotracheal tube, (5)

4. Guedel, A. E., and Waters, R. M.: A New Intratracheal Catheter, Anesth. & Analg. 7: 238-239 (July-Aug.) 1928.

an endotracheal tube, (6) a large caliber exhaling tube and (7) a wisp of cotton or small piece of tissue paper to act as a respiratory indicator over the end of the exhaling tube (fig. 3).

The most satisfactory source of compressed air is from a jet in the operating room with a compressor and storage tank elsewhere in the hospital. However, if this

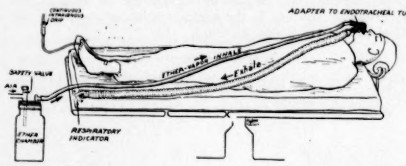

Fig. 5.—Diagrammatic sketch of apparatus shown in figure 4.

is not available, a motor or foot pump may be used if they will deliver greater than approximately 12 liters of air a minute. In addition, air that has been compressed into large cylinders may be used, although this method is obviously quite expensive. The chamber for the vaporization of ether should be so designed that varying portions of the air can be shunted over the ether without varying the volume of flow to the patient. A useful apparatus for the administration of varying concentrations of ether vapor in the inspired air is the Connell anesthetometer.[5] This is a semiautomatic apparatus which is very efficient in the maintenance of a relatively level plane of ether anesthesia. This apparatus is calibrated so that the concentrations of ether vapor delivered to the patient may be read off directly in millimeters of mercury partial pressure of ether vapor.

A much less expensive apparatus for the vaporization of ether is the so-called Richardson bottle,[6] which costs only a small fraction of the price of the anesthetometer. Although it is not nearly so automatic as the anesthetometer, this apparatus has proved satisfactory, and with a little experience one may become proficient in maintaining an even plane of anesthesia with it. With the Richardson bottle, ether is contained in an ordinary Ball-Mason fruit jar. The lid of the jar is so designed that a constant flow of air can be maintained through it, and by means of a screw setting variable amounts of the air may be allowed to pass over the ether. With the anesthetometer there is a rheostat controlled electric plate for heating the ether vapor. With the Richardson bottle the ether vapor is heated by merely setting the jar in a basin of warm water.

It is important that the tubes leading to and from the endotracheal catheter are of rather large caliber in order that there may be no difficulty in delivering a sufficient amount of air to satisfy the patient's tidal respiration and that there may be no resistance to expiration. Any of the commonly used types of endotracheal tubes may be employed. The flexible metal tube described by Woodbridge [7] is satisfactory.

The respiratory indicator on the distal end of the exhalation tube is important. By watching its movements the anesthetist may obtain considerable information as to the character of the respirations. Furthermore, this respiratory indicator serves to inform the anesthetist when the flow of air delivered to the patient is less than his respiratory volume. When this is true the patient will inhale from the exhaling tube and draw the indicator into the end of the tube. When this occurs it should be immediately corrected, since a flow of air less than the patient is breathing results in his breathing back and forth into the exhaling tube, thus building up carbon dioxide and, in addition, anoxia may develop. As long as an adequate flow of air is maintained there is practically no limit to the length to which the inhalation and exhalation tubes may be extended, thus enabling the anesthetist to be well out of the field of operation and yet be able to observe enough of the vital signs to evaluate adequately the patient's condition (figs. 4 and 5).

The semiopen type of apparatus just described is well adapted for artificial respiration. If the anesthetist's hand is placed over the end of the exhalation tube at intervals of about fifteen times a minute the air pressure will inflate the lungs, while the weight of the chest wall will take care of expiration. A safety valve in the circuit calibrated to open when 12 mm. of mercury pressure is reached obviates the danger of building up too much pressure in the lungs with this method of artificial respiration. When the semiopen method is to be used, the patient is first anesthetized with cyclopropane or ethylene and the transition to ether gradually made. After a depth of anesthesia has been reached that will permit the introduction of an endotracheal tube with facility, the larynx and trachea are sprayed with a 10 per cent solution of cocaine and the tube is inserted. The endotracheal tube is firmly anchored in position by means of adhesive tape, and the V connection from the ether vaporizer is attached to the hilt of the tube.

The administration of moderate doses of tribromethanol in amylene hydrate (70 to 80 mg. per kilogram of body weight) rectally prior to the induction of anesthesia makes for a smoother induction and probably diminishes the total amount of ether necessary to maintain anesthesia. Because of the danger of circulatory collapse it is advisable not to use tribromethanol in amylene hydrate if the operation is to be carried out with the patient in a sitting position.

605 Commonwealth Avenue.

5. Connell, Karl: An Apparatus—Anesthetometer—for Measuring and Mixing Anesthetic and Other Vapors and Gases, Surg., Gynec. & Obst. **17**: 245-255 (Aug.) 1913. The apparatus is manufactured by the Beard Machine Company, Astoria, N. Y.

6. Manufactured by the Technequipment Company, Station Street, Brookline, Mass.

7. Woodbridge, P. D.: A Flexible Metal Tube for Intratracheal Anesthesia, Anesth. & Analg. **13**: 568-570 (Nov.-Dec.) 1934.

ABSTRACT OF DISCUSSION

DR. FREDERICK W. CLEMENT, Toledo, Ohio: My associates and I choose one of three agents: avertin with amylene hydrate, pentothal sodium or a gas-oxygen mixture. We use avertin with amylene hydrate occasionally and pentothal sodium for short operations. For many years our anesthetic of choice has been nitrous oxide. Dr. Eversole said: "Since nitrous oxide is such a weak anesthetic agent that it does not permit the administration of sufficient oxygen to allow for the maintenance of anesthesia without some degree of anoxia, this agent is not used unsupplemented." Unfortunately, too little attention is paid to the many advantages of nitrous oxide-oxygen anesthesia. With nitrous oxide or gas-oxygen anesthesia there is usually some anoxemia present, but that does not imply that there will be any severe or troublesome degree of anoxia. The use of the endotracheal catheter operations about the head and neck provides a free and open airway, and 100 per cent oxygen may be administered at any time during the operation for the treatment of respiratory depression. The gases may be delivered under any desired amount of positive pressure and respiration thereby supported. The operative field is left free, and there is absolute freedom from the hazard of explosion. A gas-oxygen mixture may be used for either short or long anesthesia. Within the last year continuous gas-oxygen anesthesia was

induced intratracheally in 2 patients for brain operations. The operation on 1 patient lasted nine and a half hours, and the other operation lasted over eleven hours. At the end of operation, both patients reacted rapidly and were awake within fifteen minutes. What other inhalation agent could be used to duplicate this performance? One factor often overlooked in connection with gas-oxygen mixtures is that as the anesthesia progresses the percentage of oxygen in the mixture must be increased as rapidly as possible without disturbing the level of anesthesia. If this is not done there is grave danger of development of prolonged oxygen want. Our method of using gas-oxygen anesthesia for surgical procedures about the head and neck is to induce anesthesia with a face mask, pass an intratracheal tube by the nasal route, then connect with an adapter to the intratracheal tube or use a nasal inhaler over the tube, the endothacheal tube being used primarily to insure an open airway. Dr. Eversole's paper brings out two valuable points: protection of the patient's eyes during the operation and care to prevent malposition from kinking the endotracheal tube, with consequent obstruction of the airway.

DR. B. BURDELL SANKEY, East Cleveland, Ohio: Adequate support of the circulation for poor risk patients undergoing surgical procedures about the head and neck cannot be overemphasized. Especially in long or shocking procedures it is well to insert a large bore needle in a suitable vein before the operation is started. A continuous, slow, intravenous drip of saline solution may be connected, and if or when the need arises blood plasma or whole blood may be more readily and more quickly administered. A word of caution should here be said about using pentothal sodium or evipal soluble for even short operations about the nose and throat in which even a small amount of bleeding may be encountered. Serious difficulty may be experienced in maintaining an adequate exchange due to collection of blood in the base of the throat. Unless an endotracheal tube is inserted, there are probably other agents which are more suitable for this type of procedure. A relatively simple and satisfactory method of producing adequate anesthesia for certain operations about the head and neck is to employ morphine and scopolamine hydrobromide in divided doses. This method has proved useful for some fractures about the face and jaw for which otherwise an endotracheal setup might be advisable. For certain operations on the eye it is frequently advantageous to combine local with intravenous anesthesia. When employing pentothal sodium for such operations it has been our custom first to spray the nose and throat with a 2 per cent solution of pontocaine hydrochloride. This facilitates the use of a pharyngeal airway, which is inserted after the induction of anesthesia with pentothal sodium. A local anesthetic may then be infiltrated about the orbit, or cocaine may be applied directly to the eye. Oxygen may be administered by a nasal inhaler which is fitted directly on the pharyngeal airway. A 50 per cent mixture of nitrous oxide and oxygen may likewise be administered through the inhaler in conjunction with pentothal sodium.

DR. W. OTIS MCQUISTON, Iowa City: The anesthesia staff at the State University of Iowa's hospitals have recognized the fact that nitrous oxide asphyxia has been used for years for anesthesia. We maintain that with proper individualized premedication surgical anesthesia can be induced and maintained with adequate oxygen. Less than 20 per cent oxygen is never used in our clinic.

DR. URBAN H. EVERSOLE, Boston: I want to thank Drs. Clement, Sankey and McQuiston for their valuable additions to my paper. Dr. Clement has aptly emphasized a most important point in the administration of any anesthetic agent. The safety of any method of administration is measured not entirely in terms of the agent itself but rather in terms of the ability and experience of the man who employs it. I have no doubt that nitrous oxide administered by Dr. Clement is much safer for the patient than it would be when administered by me. Any of the agents discussed may be perfectly safe in the hands of anesthetists who are proficient in their use. I doubt that statistics are available which would properly evaluate the relative hazard presented by varying degrees of oxygen want and the hazard of explosion when inflammable anesthetic agents are used. I am sure, however, that unsupplemented nitrous oxide-oxygen anesthesia does not allow for the administration of oxygen in as high a concentration as is usually considered normal. The suggestion that the endotracheal tube should be one in which there is no danger of kinking is important. I use the flexible metal tube described by Woodbridge, and with this tube there is no danger of kinking or collapsing. Dr. Sankey's discussion of some of the problems associated with anesthesia for operations on the eye was most interesting. The limitation of time permitted only a sketchy mentioning of some of the many problems involved in the administration of anesthesia for surgical procedures about the head.

USE OF SILVER PICRATE IN THE TREATMENT OF VAGINITIS: A FIVE YEAR STUDY

FORMATION OF A VAGINITIS UNIT IN A GYNECOLOGIC CLINIC

JOHN D. CORBIT JR., M.D.
ROBERT MCELROY, M.D.
AND
J. H. CLARK, M.D.
PHILADELPHIA

The development of a treatment regimen with silver picrate for patients with Trichomonas vaginalis vaginitis in the gynecologic clinic of the Philadelphia General Hospital five years ago has brought about several interesting changes in the clinic. Prior to that time routine smears were not made and the patients were handled in a more or less haphazard fashion. With the revival of interest in this parasite, many types of treatment have been developed, but in following the literature one finds few reports from clinics in which any one form of treatment has been kept up for a considerable length of time. In many places the search for the organism is made under unfavorable conditions and the diagnosis is not always confirmed by laboratory methods. It is our purpose in this paper to state just how the situation in relation to Trichomonas infection and vaginitis in general has been managed at this hospital.

DIAGNOSIS

If a good microscope is available for use in the clinic, specimens need not be sent to the laboratory, and the diagnosis of T. vaginalis vaginitis becomes easy. With the patient in the lithotomy position, the vulva is inspected and an unlubricated speculum inserted. No lubrication is used on the glove or speculum because usually there is enough vaginal secretion to make it unnecessary, and more specifically because most of the common lubricants are dehydrating agents and render the organism immobile. The cervix and vagina are then inspected and a specimen of the discharge is taken on a cotton swab. The swab is immersed in a test tube containing about 3 cc. of physiologic solution of sodium chloride. This dilutes the material for examination without interfering with the motility of the organism. This motility establishes the diagnosis when a drop of the solution is examined first under the low power and then under the high dry lens of a microscope. In this study cultures were made on all specimens and morphologic studies were made on stained smears. These are not necessary when one becomes familiar with the appearance of the organism in the saline drop-

From the Philadelphia General Hospital.
The nursing staff and the social service workers in the gynecologic dispensary of the Philadelphia General Hospital gave valuable assistance during the course of this study.

let. When the history and clinical appearance are suggestive and yet no motile organisms can be demonstrated, it is important to ask the patient whether she has had a douche just before coming in for examination. If so, she is asked to return for reexamination after having gone at least forty-eight hours without one.

The clinical diagnosis of T. vaginalis vaginitis is suggested by a history of discharge and itching and by the finding of reddening about the labia and vaginal mucosa with small punctate hemorrhagic spots in the mucosa, especially on and about the cervix. The usual discharge is thin, frothy, yellowish gray and malodorous. This may be regarded as typical, but the organism is found many times when few of these conditions are present.

The diagnosis of vaginal moniliasis also may be made from a wet preparation and confirmed by streaking a slant of Sabouraud's agar for culture. The discharge here is thick, white and caseous and the vaginal infection is often associated with dermatitis and excoriation about the labia. Most of the patients we see are pregnant at the time.

PREPARATION FOR TREATMENT

When the diagnosis has been established, it is necessary in most instances to clean out whatever mucus and débris are present in the vagina. This is done so

TABLE 1.—*Incidence of Trichomonas Vaginalis and of Monilia Albicans Infection (1935-1940)*

	Trichomonas Vaginalis		
	Total	White	Negro
Number of patients examined.....	4,850	2,967	1,883
Number with positive reaction.....	1,646	748	898
Percentage with positive reaction *...	33.8	25.2	47.7
	Monilia Albicans		
Number of patients examined.....	2,154	1,186	968
Number with positive reaction.....	151	76	75
Percentage with positive reaction *...	7.3	6.4	7.8

* Since these figures are obtained from a group of patients in a definite gynecologic group, the percentages would probably be smaller if taken from a more general hospital group.

that when the medication is applied it can act directly on the infected tissue without having to penetrate a mass of débris. One of the most common agents used for this cleansing is tincture of green soap. However, this has not proved satisfactory in our hands. The soap is mildly irritating to inflamed mucosa, and this, combined with the necessary mechanical scrubbing, has not only failed to remove the mucus efficiently but has caused bleeding in some cases. The cleansing technic recently reported by Savitz and his associates[1] has been used in this study. A cotton sponge, saturated with the kaolin-alumina mixture (aluminum hydroxide-colloidal kaolin suspension to which have been added minute quantities of thymol, eucalyptol and menthol) is used to swab over the vaginal mucosa and cervix. This is washed out with another sponge saturated with sterile water, followed with a dry sponge. In this way, mucus and débris can be efficiently removed without danger of irritation or bleeding, either to eroded or to normal tissues.

This thorough cleansing is important because recurrence of infection can occur from organisms harbored in this débris. In this connection, it is especially important to clean out the plug of mucus from the cervix. Cleansing also reveals the extent of the lesions and the true appearance of any pathologic condition that is present. In moniliasis, this technic is helpful in removing the white caseous patches without trauma to the inflamed tissues underneath. When erosions and other

TABLE 2.—*Results of Treatment in 1,646 Cases of Trichomoniasis*

Number of Cases	Percentage of Cures	Percentage of Failures	Number of Treatments	Length of Time on Treatment
1,419	86.2	...	2-3	2 to 3 weeks
49	3.2	...	3+	3 weeks +
83	4.7	...	1	Lapsed treatment
95	...	5.9	...	Did not respond to treatment

lesions of the cervix are encountered, the usual methods are employed to clear these up before continuing with treatment for the vaginitis. Reinfection may occur from organisms which may persist if these lesions are untreated.

TREATMENT

We have continued with the plan of treatment outlined by Buxton and Shelanski in 1935.[2] The reasoning that led to the adoption of this technic was as follows: The successful use of silver nitrate in T. vaginalis vaginitis had been reported, but although it possesses strong germicidal qualities its corrosive action makes it undesirable for repeated application. Picric acid has been used [3] and has a mildly germicidal and soothing effect. It also fixes tissues and tends to render them bacteriostatic, but its germicidal action is comparatively weak. Silver picrate combines the germicidal and soothing action of these two without the corrosive action of the nitric acid salt. It has strong fungicidal and protozoacidal properties with a specific action against T. vaginalis in vitro in a 1:1,000 dilution in approximately three minutes.[4]

We use the combined powder insufflation and suppository technic recommended by Golub and Shelanski,[5] which is briefly as follows: Five Gm. of 1 per cent silver picrate in kaolin [5a] is insufflated into the vagina at the first clinic visit. This is done with the Shelanski insufflator. The patient is given six silver picrate suppositories [5a] (2 grains [0.13 Gm.] of silver picrate in a boroglyceride-gelatin base) and instructed to

TABLE 3.—*Results of Treatment in 151 Cases of Moniliasis*

Number of Cases	Percentage of Cures	Percentage of Failures	Number of Treatments	Length of Time on Treatment
137	91	..	2-3	2 to 3 weeks
10	4	..	3+	3 weeks +
3	2	..	1	Lapsed
5	..	3	...	Did not respond to treatment

insert one each night before retiring and to use a sanitary pad. She is advised to refrain from douches, tub baths and intercourse while under treatment. This

1. Savitz, S. P.; Golub, L. J., and Shelanski, H. A.: Vaginal Use of Aluminum Hydroxide and Colloidal Kaolin, Am. J. Obst. & Gynec. **39:** 329-331 (Feb.) 1940.

2. Buxton, Russell von L., and Shelanski, H. A.: Trichomonas Vaginalis Vaginitis: Incidence, Diagnosis and Treatment with Silver Picrate, Am. J. Obst. & Gynec. **33:** 842-845 (May) 1937.

3. Goodall, J. R.: Specific Treatment for Trichomonad Vaginitis, Lancet **2:** 648-649 (Sept. 16) 1933.

4. Shelanski, H. A.: Studies on Trichomonas Vaginalis in Vitro, J. Lab. & Clin. Med. **21:** 790-793 (May) 1936.

5. Golub, L. J., and Shelanski, H. A.: Silver Picrate Treatment of Vaginal Trichomoniasis, J. Lab. & Clin. Med. **22:** 1155-1160 (Aug.) 1937.

5a. Supplied by John Wyeth & Brother, Inc., Philadelphia.

is repeated weekly until the symptoms are relieved and smears are negative for the organism. Two insufflations suffice in most cases, but in some cases it is necessary to give additional insufflations. If tests on a patient remain negative for three consecutive menstrual periods after cessation of treatment, she is considered cured and discharged as such.[6]

VAGINITIS UNIT

The vaginitis unit of a gynecologic clinic need not be separated from the rest of the clinic, but when space is available it is helpful to do so. In our survey, we used a separate room with two examining tables and a bench for the microscope and other laboratory equipment. Under these conditions a physician, with the help of only one nurse, may see a great many patients in a relatively short time. Smears and cultures are taken on all new patients admitted to the general clinic if there are any symptoms or signs of vaginitis. If no other pathologic condition requiring more urgent treatment is found, they return on their next visit to the vaginitis unit. They are followed here until cured or referred back to the general clinic.

It has been interesting to note that some patients who come to the clinic primarily for relief of pelvic pain are cured after treatment in the vaginitis unit. Patients having moderate retroversion or vaguely tender adnexal masses, who complain of pain in the lower part of the abdomen and back ache and who also have vaginitis it has been our custom to refer first to the vaginitis unit and to plan further therapy after the vaginitis and cervicitis have been cleared up. More than a third of these patients are relieved of all complaints when they return. In this way we believe that a certain number of unnecessary pelvic operations have been prevented.

RESULTS

Since the vaginitis unit has been set up we have been able to reduce the time required for each clinic visit. The entire procedure, consisting of diagnosis, preparation, insufflation and instruction, takes but five minutes for each patient. Also, we have been able to bring about more than a 50 per cent reduction in the number of necessary clinic visits.

The incidence found in a series of routine examinations is given in table 1. The cases of trichomoniasis were found chiefly in the gynecologic clinic; several cases, however, were referred from the antepartum clinic. Most of the cases of moniliasis, however, were referred from the antepartum clinic, and only a few were found on routine gynecologic examinations.

Diagnosis in this entire survey was done by smear and culture. In clinical work, however, it is necessary to make the diagnosis only by smear.

From table 2 it may be seen that of 1,646 patients treated for trichomoniasis 86.2 per cent were cured within two to three weeks, 3.2 per cent in more than three weeks, 4.7 per cent lapsed treatment and 5.9 per cent did not respond permanently to treatment, and the focus of infection could not be determined, even though the possibility of bartholinitis or skeneitis due to T. vaginalis was ruled out. Some of these patients had several recurrences before being finally rid of the infection.

Table 3 shows that among 151 patients with vaginal moniliasis 91 per cent were cured within three weeks, 4 per cent required treatment more than three weeks, 2 per cent lapsed treatment and 3 per cent did not respond to treatment. Some of these patients were too near the time of delivery to continue treatment.

Some patients with a decidedly alkaline urine tend to be irritated by silver picrate therapy. To date we have observed but 2 patients who might be classed as being sensitive to the drug. It is believed that these patients had picric acid sensitivity. There have been no untoward reactions in all the other patients treated with silver picrate.

CONCLUSIONS

A method of management of cases of vaginitis has given satisfactory results in 94.1 per cent of 1,646 cases of trichomoniasis and in 97 per cent of 151 cases of moniliasis.

The establishment of a vaginitis unit and a routine for the management of these cases has resulted in an economy of time for the clinic personnel and a higher percentage of satisfactory results for the patients.

Unnecessary pelvic surgery has been prevented in some cases.

3815 Chestnut Street.

6. Hesseltine, H. C.: Fallacies of Trichomonas Vaginalis Vaginitis: Streptococci as Etiologic Agents, Am. J. Obst. & Gynec. **26**: 46-53 (July) 1933. Karnaky, K. J.: Why Does Trichomonas Vaginalis Recur? Report of Thirty-Eight Cases, Urol. & Cutan. Rev. **42**: 812-813 (Nov.) 1938.

RECENT INVESTIGATIONS ON GONOCOCCIC VAGINITIS

JOHN L. RICE, M.D.
Commissioner of Health
ALFRED COHN, M.D.
ARTHUR STEER, M.D.
AND
ELEANOR L. ADLER, M.D.
NEW YORK

The New York City Department of Health, with the cooperation of the United States Public Health Service, in 1938 began research on gonococcic vaginitis with the object of studying diagnosis, criteria of cure and epidemiology and of evaluating different methods of treatment. This report summarizes the more important conclusions reached and expresses our agreed opinion and that of the members of the advisory committee [1] who so ably guided the work.

Since the inception of this study, 381 (22.2 per cent) of 1,715 children examined were found to have gonococcic vaginitis. The infected children were examined once a week until the diagnostic laboratory procedures had given negative results for about eight successive weeks, after which they were examined at monthly intervals. Material for examination was obtained by inserting a glass female catheter containing saline solution into the vagina. Portions of the same specimen of exudate were used for smear and for culture.

DIAGNOSIS

Nonspecific vaginitis and gonococcic vaginitis can be differentiated only by smear and/or culture. As can be seen from chart 1, cultures are far superior to smears, especially in the chronic stage of the infection.

This study was supported in part by the Milbank Memorial Fund, the New York Foundation and the Health Research Fund, Inc.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

From the Department of Health, City of New York (Drs. Cohn and Steer) and the Department of Pediatrics, New York University and the Children's Medical Service of Bellevue Hospital (Dr. Adler).

1. The advisory committee for the study consisted of Drs. John L. Rice, Commissioner of Health; Edward L. Keyes, Chairman; Eleanor L. Adler; Reuel A. Benson; Casper G. Burn; Walter Clarke; Alfred Cohn; Adolph Jacoby; Robert M. Lewis; John F. Mahoney; Ralph S. Muckenfuss; Bernard Facella; Percy S. Pelouze, and Theodore Rosenthal.

CRITERIA OF CURE

It was arbitrarily agreed that children to be considered cured must be clinically normal and that at least seven consecutive smears and cultures made during a period of at least sixteen weeks must show no gonococci. Prolonged study revealed that this was satisfactory for 92.2 per cent of the 204 patients studied intensively. Results of tests of 16 became positive again more than sixteen weeks after they had first become negative. It was impossible to say whether these patients had a recurrence of the original disease or a new infection.

STUDIES ON THERAPY

Forty-one children were observed who were not given any form of treatment. Some recovered within a short time, 54 per cent by the tenth week and 87 per cent by the twenty-eighth week after the beginning of observation (chart 2). This is definite evidence that spontaneous cure of the disease may occur in the majority of patients. These children have remained normal for an average of forty-five and nine-tenths weeks and have had an average of fourteen and four-tenths negative smears and cultures.

TREATMENT WITH ESTROGENIC SUBSTANCES

Thirty-three children were treated with estrogenic substances (amniotin and diethylstilbestrol). The 12 (36 per cent) who were cured were treated for an average of fifty-four and five-tenths days. Comparison with the control series showed that bacteriologically cure was no more frequent among patients given this form of therapy than among the untreated patients. However, definite clinical improvement followed shortly after the institution of treatment.

TREATMENT WITH SULFANILAMIDE

Fifty-three children were treated with sulfanilamide. The 23 (43 per cent) who were cured were treated for an average of nine and six-tenths days. This drug gave definitely better results than would be expected without treatment (chart 3).

TREATMENT WITH SULFAPYRIDINE AND SULFATHIAZOLE

Because the results of therapy were approximately the same, the 20 children treated with sulfathiazole and the 57 treated with sulfapyridine were combined into a single group. The 67 (87 per cent) who were cured received treatment for an average of six and seven-tenths days. These drugs were effective for rectal infection when it was present. Sulfathiazole appeared to be the drug of choice, because it produced fewer toxic reactions (nausea and vomiting) than did sulfapyridine.

For the present it is suggested that children be given ½ grain (0.03 Gm.) per pound (0.5 Kg.) of body weight per day, with a maximum of 30 grains (1.9 Gm.) per day for seven to ten days.

It must be pointed out that, of the 10 children who were not cured by treatment with sulfapyridine or sulfathiazole, only 2 showed gonococcic vaginitis, either clinically or by smear or culture, during the first four weeks after therapy was stopped. An average of eight and two-tenths weeks elapsed before the failure of treatment was recognized in these 10.

EPIDEMIOLOGY

Vaginitis is generally believed to be extremely contagious, requiring only superficial contact for its transmission. Outbreaks in epidemic form have been described. Infected children are therefore excluded from institutions such as schools, general hospitals, institutions for the care of children and convalescent homes.

However, the question of widespread dissemination of this disease in public places requires reconsideration. In more than five years of search no evidence was found of an epidemic in a New York school although many children with fresh infections attended these schools before a diagnosis was made. During the course of this study no instance of an epidemic in any institution or orphanage was discovered. Isolated cases did occur, but always the suspicion arose that some break in technic had spread the disease or that children had been admitted with unrecognized infection. In one overcrowded dormitory where the possibilities of isolation were remote, only 2 of 90 feebleminded girls were found to have the disease.

As a result of the foregoing observations, it seems likely that many of the epidemics of vaginitis reported in the past were not due to the gonococcus. There is further evidence that this infection is not as contagious

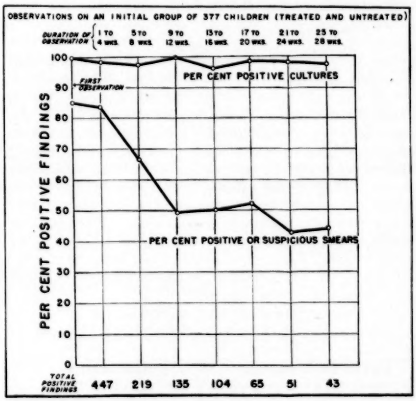

Chart 1.—Accuracy of diagnosis by smear and culture in proved cases (proved by culture) of gonococcic vaginitis.

as has been heretofore believed. In the vaginitis ward of a hospital there were children with acute gonococcic vaginitis, children who were cured and being observed for proof of cure and others who had been admitted to the ward for observation but were later shown not to be infected. No restrictions were placed on these children, and they were not isolated one from another. Over a period of years no instance of disease in the noninfected children was observed. Furthermore, during two different periods of several months all the children in the ward used the same toilets without causing new infections. As many as 8 infected children with profuse vaginal discharge were placed on the same toilet in rotation, and several cultures were made of material taken from the toilet seat. On only one of eighteen occasions were gonococci recovered, and then only a few colonies could be found in one culture. As far as we know, no instance of transmission of the disease by way of the toilet seat has ever been proved.

Investigation of parents and siblings revealed that the probable source of infection in the majority of cases was

an infected adult in the home. Fifty per cent of a group of parents who prior to examination believed themselves healthy were found to be infected. Another important method of transmission that was disclosed is associated with sexual curiosity and experimentation. Thirty-five per cent of infected girls between the age of 6 years and puberty admitted sexual contacts.

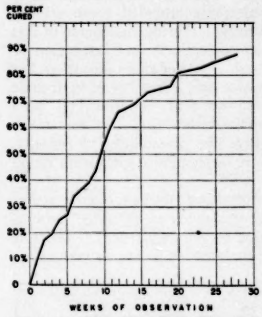

Chart 2.—Gonococcic vaginitis, untreated (control) group: spontaneous cures occurring without treatment in 41 cases during twenty-eight weeks' observation.

It may be concluded that the transmission of the disease requires intimate contact between infected adult or child and noninfected child. Contaminated fomites, such as rectal thermometers, enema tips, diapers, towels and linen may possibly be factors in the spread of the disease.

RECOMMENDATIONS

It is recommended that children not be excluded from school because of gonococcic vaginitis except during the stage of profuse discharge. The recommendation is based on the fact that the only intimate contact among children would be by way of the toilet seat, which has not been shown to be a factor in the transmission of the disease. It should be understood that sex play should be prevented by adequate supervision. Furthermore, treatment with sulfathiazole would cure most infected children within a few days, so that even with the restriction based on the presence of discharge the children could return to school quickly.

With this form of treatment, vaginitis as a rule is not a disease requiring hospitalization. Even children in

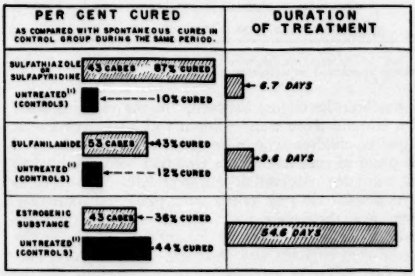

Chart 3.—Course of gonococcic vaginitis in treated and untreated groups. Control group (1): 41 untreated children, with cures occurring during twenty-eight weeks' observation.

institutions for the care of children need not be sent to a hospital, since treatment by the attending physician or a neighboring clinic would be sufficient. Children who must be hospitalized because of complications or the occurrence of concurrent diseases need not be placed in separate isolation wards but may be treated for the complicating factor without regard to the vaginitis. Treatment with sulfathiazole would soon make such children noninfectious. It must be remembered that during the first few days aseptic technic should be practiced by the nursing staff. In the care of infected children, instruments and fingers come into intimate contact with the genitals of the patients and if not thoroughly cleansed may possibly infect another child. When a trained, efficient nursing staff is not available isolation of the children in separate wards is to be preferred.

It is further recommended that cultures be used for diagnosis and as criteria of cure and that the follow-up study for the determination of cure last at least sixteen weeks. It is important that family contacts should be examined to discover the source of infection and to prevent reinfection. One should also bear in mind that older children may have been infected during sex play or as a result of sexual intercourse.

125 Worth Street.

ABSTRACT OF DISCUSSION

Dr. Reuel A. Benson, New York: From the pediatric point of view the results of this research are as revolutionary as they are brilliant. Dr. Rice and his co-workers have made a valuable contribution. For many years gonococcic infection in little girls has been a rather disreputable waif, going from the pediatrician, the gynecologist, to the urologist, asking for help and never getting it. Public health officials generally have shunned it. Some years ago the superintendent of schools in New York City filed charges saying that forty-eight children in the public schools had been inoculated with "a loathsome disease" in the public hospitals. The health commissioner investigated that report and exonerated the hospitals, but he did say that the problem of the spread of the disease had never been solved anywhere. Now it has been solved. This paper represents the ideal in practical research. It will serve as a guide for health officers as well as for hospital officials. The dictum that vaginitis "spreads like wildfire" is no longer true, and this, we thought, was about the only "fact" we had in connection with the disease. Hospitalization, local treatment and exclusion from school for long periods now all go by the board. Incidentally, this investigation makes possible great financial saving. At the Metropolitan Hospital in New York we have in the past hospitalized as many as 50 or 100 children with gonorrheal vaginitis, sometimes for months, giving them local treatment which was always bad psychologically, costing the city of New York thousands of dollars annually, and most of these children did not have gonococcic vaginitis at all, although we didn't know that. As a result of the information derived from this investigation we have an average of only 10 or 15 cases, and these are of homeless children coming from child caring institutions. There is also evidence in this report to indicate that a similar study of adult females might lead to equally brilliant results. Undoubtedly the female with gonorrhea is the one who spreads the disease. If such a group could be studied as intensively with cultures, smears and attention to what I would call the "gonorrheal nest," the individual who spreads the disease to the children, we might ultimately have great results in prevention.

Dr. Goodrich C. Schauffler, Portland, Ore.: I regard the work of Dr. Cohn and his associates, supplemented by that of Dr. Robert Lewis, as a classic commitment. It is sound and permanent, if somewhat revolutionary doctrine. Having so stated, perhaps I may offer some friendly criticisms: Dr. Cohn has proved that gonorrheal vaginitis apparently cures itself almost as well as it can be cured by any medication; and then he assures us that one practically cannot transmit the disease by ordinary contacts. We put ourselves in a dangerous position if we accept his commitments as given here, and if we go ahead and translate them literally into our practice. I don't believe that Dr. Cohn really means that we may actually dispense with treatment or precautions in relation to the transmission of infec-

tion. For example, his group of so-called untreated patients were handled quite differently from an "untreated group" in the usual sense. These patients were hospitalized under hygienic surroundings and were examined, cleansed and cultured frequently. I have always stressed the value of simple vaginal invasion with distention of crypts in the interest of drainage, incidental to the use of estrogenic suppositories and medicated ointment. There is a mechanical factor of importance here; therefore these children in ideal surroundings, treated weekly or semiweekly by vaginal manipulation, are not typical of a group left entirely alone, and we must not allow any one to suppose that we must not use the strictest precautions in relation to cross infection. In relation to infection from toilet seats, I have this to say: Six children with gonococcic infections, doubtless ordinarily cleansed, were passed on and off a toilet seat; then cultures of the toilet seat were carefully taken, and in only one instance were isolated colonies of Neisseria found. Uninfected children were not infected by the use of these seats. I think it has been proved that the culture material available to date is unsatisfactory. It seems likely, then, that culture may be at fault here. Also whereas six children might be exposed safely to such tests, the seventh or the seventieth might be the unfortunate victim. In any event, I don't believe we can dispense with all these precautions. I don't agree that institutionalization is not dangerous from several angles. I am certain that there is a danger in foundling home care. As for hospitalization in general, I admit that, save in exceptional circumstances, it is unsatisfactory from both a practical and a psychologic point of view.

DR. HAVEN EMERSON, New York: Twenty-six years ago Dr. William H. Park made a study of the bacteriology of toilet seats in schools in which children with gonococcic vaginitis had been found, and he never found any such organism on the toilet seats. That was done in numerous schools in Brooklyn and Manhattan with the thoroughness and controls characteristic of the work of Dr. Park. We must recognize that one of the most valuable results of specific chemotherapy is the abbreviation of the period of communicability. If a child's period of communicability can be reduced from twenty-six or twenty-eight weeks to one week, a great gain has been accomplished in control of the disease. The risk of careless handling in an institution for children or orphan home is of a different order from what is found in a hospital. The hospital is operated on the basis of a medical aseptic technic. I should be inclined to suggest that we do not change the sanitary code of the city of New York with regard to the exclusion of children with purulent vaginal discharges from any nurseries, not because we believe the association of those children in a hospital would lead to infection but because of obvious risks of infection where less exact and careful measures for bacterial cleanliness are observed.

DR. CARL A. WILZBACH, Cincinnati: I had the privilege more than fifteen years ago of starting a children's vaginitis clinic in the Cincinnati Health Department. In this clinic we soon discovered that the follow-up examination from these children was a splendid method of finding new infectious cases. We made an effort every time we had one of these children to get the parents into the clinic for examination, and we found, just as Dr. Cohn has said, that the source of the infection was usually the adult, the mother or the father, or an older person in the family; so, in addition to the other fine things that have been contributed by this paper, let us remember the case finding possibilities.

The Sulfonamides Not Yet Fully Appreciated.—Living within the epoch, we have hardly yet appreciated the benefits which the new therapy has conferred and will continue to confer upon medicine and mankind. Vaccination, antityphoid inoculation and salvarsan may one day seem small discoveries beside that of sulfanilamide, which was first shown to have therapeutic possibilities in the case of streptococcal infections only six years ago.—Ryle, John A.: The New Chemotherapy, *Guy's Hosp. Gaz.* **55**:222 (Sept. 6) 1941.

SULFATHIAZOLE IN THE TREATMENT OF GONORRHEA IN WOMEN

PAUL F. FLETCHER, M.D.
ORA JAMES GIBSON, M.D.
AND
S. EDWARD SULKIN, PH.D.
ST. LOUIS

The encouraging results obtained by many investigators [1] treating gonorrhea in the male with drugs of the sulfonamide series and the relatively few reports [2] concerning the use of these drugs in the treatment of gonococcic infection in women suggested the need for further investigation of this problem. Soon after sulfathiazole, the thiazole derivative of sulfanilamide, became available to the medical profession for clinical trial a study was undertaken to determine the efficacy of this drug in a carefully controlled group of hospitalized women. Studies on toxicity in animals by Van Dyke, Greep, Rake and McKee [3] and Long, Haviland and their associates [4] indicated that the drug could be safely used clinically under carefully controlled conditions. It was found that the sulfathiazole compound was approximately one third less toxic than sulfapyridine, based on 50 per cent end point titrations in mice. Metabolic studies have shown that sulfathiazole is more rapidly metabolized and undergoes less conjugation than sulfapyridine. In view of the comparative toxicity and metabolism of these two compounds McKee and her associates [5] concluded that sulfathiazole is a more desirable therapeutic agent than sulfapyridine.

PLAN OF STUDY

This investigation was conducted over a period of eleven months during which time 194 gonococcic infections in women were studied. The patients investigated were drawn from a special unit of the Venereal Disease

From the Venereal Disease Control Service and Laboratory Section of the St. Louis Health Division.

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This study is incidental to the Venereal Disease Control Program sponsored by the St. Louis Health Division in cooperation with the United States Public Health Service.

1. Results reported by:
Van Slyke, C. J.; Thayer, J. D., and Mahoney, J. F.: Sulfanilamide Therapy in Gonococcal Infections, Ven. Dis. Inform. **18**: 417 (Dec.) 1937.
Van Slyke, C. J., and Mahoney, J. F.: Further Observations in Sulfanilamide Therapy of Gonococcal Infections, New York State J. Med. **40**: 122 (Jan. 15) 1940.
Harkness, A. H.: Chemotherapy (Especially with Sulfanilamide and Sulfapyridine) of Gonorrhea and Its Complications, with Special Reference to Cause and Prevention of Failures, Brit. J. Ven. Dis. **16**: 211 (July-Oct.) 1940.
Fuhs, H.: Chemotherapy with Special Reference to Sulfanilamide Preparations, Wien. klin. Wchnschr. **53**: 566 (July 12) 1940.
Mahoney, J. F.; Wolcott, R. R., and Van Slyke, C. J.: Sulfamethylthiazole and Sulfathiazole Therapy of Gonococcal Infections, Am. J. Syph., Gonor. & Ven. Dis. **24**: 613 (Sept.) 1940.
Pelouze, P. S., and others: Gonorrhea in the Male: Results of Treatment with Sulfanilamide, J. A. M. A. **115**: 1630 (Nov. 9) 1940.
Van Slyke, C. J.; Wolcott, R. R., and Mahoney, J. F.: The Chemotherapy of Gonococcic Infections, ibid. **116**: 276 (Jan. 25) 1941.
2. Moffett, M.: Chemotherapy (Sulfapyridine, Sulfanilamide Derivative) in Women, Brit. M. J. **2**: 8 (July 6) 1940. Brunet, W. M.; Salberg, J. B., and Koch, R. A.: Gonorrhea in Women: Comparison of Results With and Without Sulfanilamide Therapy, New England J. Med. **223**: 277 (Aug. 22) 1940. Nimelman, A.; Mahoney, J. F., and Van Slyke, C. J.: Sulfanilamide Therapy of Gonococcal Infection in Hospitalized Prostitutes, in The Gonococcus and Gonococcal Infection, Publication 11, American Association for the Advancement of Science, New York, Science Press, 1939, p. 132.
3. Van Dyke, H. B.; Greep, R. O.; Rake, Geoffrey, and McKee, Clara M.: Observations on Toxicology of Sulfathiazole and Sulfapyridine, Proc. Soc. Exper. Biol. & Med. **42**: 410 (Nov.) 1939.
4. Long, P. H.; Haviland, J. W., and Edwards, L. B.: Acute Toxicity, Absorption and Excretion of Sulfathiazole and Certain of Its Derivatives, Proc. Soc. Exper. Biol. & Med. **43**: 328 (Feb.) 1940. Long, P. H.; Haviland, J. W.; Edwards, L. B., and Bliss, Eleanor A.: Toxic Manifestations of Sulfanilamide and Its Derivatives, with Reference to Their Importance in Course of Therapy, J. A. M. A. **115**: 364 (Aug. 3) 1940.
5. McKee, Clara M.; Rake, Geoffrey; Greep, R. O., and Van Dyke, H. B.: Therapeutic Effect of Sulfathiazole and Sulfapyridine, Proc. Soc. Exper. Biol. & Med. **42**: 417 (Nov.) 1939.

Control Service of the St. Louis Health Division, concerned only with the diagnosis of venereal diseases in prostitutes and inmates of bawdy houses. A special city ordinance [6] providing for the hospitalization and treatment of prostitutes infected with any of the venereal diseases made this study possible.

Every woman showing clinical evidence of gonococcic infection confirmed by laboratory tests was isolated for a period of at least two weeks. Specimens for smears and cultures were obtained on the first and second day of isolation, after which treatment was continued for from four to twelve days. Laboratory examinations were discontinued from the second to the eighth day and were resumed nine days after medication was started, at which time daily specimens for smears and cultures were taken until the fourteenth day. If the last three consecutive smears and cultures were negative, the patient was discharged from the hospital and placed on "quarantine parole." Accordingly, the patient was required to report to the clinic at weekly intervals for pelvic examination and laboratory study. If clinical and laboratory examinations hours before being transferred to an appropriate culture medium. Immediate refrigeration is essential to inhibit the growth of contaminants which would render subsequent isolation of the gonococcus more difficult. The culture technic used has been described in detail by Sulkin and Gottlieb.[7] The exudate suspensions were plated on proteose-peptone no. 3–hemoglobin agar and incubated at 36 C. in an atmosphere containing 10 per cent carbon dioxide for forty-eight hours. The oxydase test described by Gordon and McLeod [8] was used for identifying the gonococcus colonies. Smears were made from the oxydase-positive colonies and stained by an approved Gram technic. In a few instances more complete identification included the carbohydrate fermentation test and the Thomson [9] alkali solubility test.

A minimum of lubricant, consisting of a dilute solution of tincture of green soap, was used on the speculum in obtaining specimens in this series. Gillick, Sulkin and Stephens [10] feel that the use of K-L jelly or similar lubricants may be responsible for the unsatisfactory results frequently obtained when the cultural method is employed in the diagnosis of gonococcic infections.

TABLE 1.—*Results of Sulfathiazole-Beta-Lactose Therapy in One Hundred Cases of Gonococcic Infection*

	Number of Weeks After Admission to Hospital																			
	1		3		6		9		12		15		18		21		24		27		30		33		36	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Positive smear or culture.....	100		4		0		0		0		3		0		0		0		0		0		0		0	
		100		4.4		0		0		0		6.6		0		0		0		0		0		0		0
Negative smear or culture.....	0		95		75		54		45		36		20		11		10		9		4		11		0	
		0		95.9		100		100		100		92.3		100		100		100		100		100		100		100
Lapse in attendance or closed without proof of cure	0		1		25		46		53		55		58		58		59		59		59		59		59	
		0		1		25		46		53		55		58		58		59		59		59		59		59
Cure.....	0		0		0		0		0		39		39		41		41		41		41		41		41	
		0		0		0		0		0		86.6		92.8		97.6		100		100		100		100		100

continued negative for twelve consecutive weeks, the patient was considered "clinically cured." Many returned to the clinic for longer periods, thus permitting follow-up study for six months or more. If a positive smear or culture was obtained at any time during this "parole period," the patient was again hospitalized and subjected to another complete study. The condition was considered a recurrence of the original infection, regardless of the length of time since termination of the first course of treatment, unless reinfection could definitely be established.

DIAGNOSIS

To collect specimens for the smear and cultural methods of examination the urethral meatus was cleansed with sterile cotton, then pressure was applied to the urethra and Skene's ducts to obtain adequate material for examination. The exudate was collected on sterile cotton swabs. Cervical specimens were obtained by compressing the portio between the blades of a Graves speculum to force the contents of the deep racemose glands into the cervical canal. This exudate was also collected on a sterile swab. The urethral and cervical specimens were placed in the same tube containing 1 cc. of broth (proteose-peptone no. 3) to prevent the exudate from drying. The suspensions were kept in a refrigerator for not longer than six

OUTLINE OF TREATMENT

Two methods of treatment were used. The first 100 patients received sulfathiazole [11] and vaginal instillations of beta-lactose boric acid. The second group of 94 patients received only sulfathiazole. The administration of sulfathiazole was the same in the two groups. A clinical criterion by which to govern the daily dose of sulfathiazole had not been established at the time this study was begun, hence an arbitrary dose was decided on. Sixty grains (4 Gm.) was given in divided doses of 15 grains (1 Gm.) each four times a day for five consecutive days. This daily dose was approximately equivalent to ½ grain (0.03 Gm.) a pound. Medication was begun as soon as the diagnosis of gonorrhea was established, without regard for the phase of the menstrual cycle. A second course of treatment was given as a routine during the following period of menstruation. If menstruation occurred during the first administration of the drug, medication was not repeated during the subsequent period. When it

6. Bredeck, J. F.: What Every Physician Should Know About the St. Louis Venereal Disease Ordinance, Bull. St. Louis M. Soc. **34**: 148, 1939.

7. Sulkin, S. E., and Gottlieb, Eleonore: The Use of an Improved Culture Medium in the Diagnosis of Gonococcal Infection in the Adult Female, Am. J. Syph., Gonor. & Ven. Dis. **25**: 22 (Jan.) 1941.

8. Gordon, J., and McLeod, J. W.: The Practical Application of the Direct Oxidase Reaction in Bacteriology, J. Path. & Bact. **31**: 185 (April) 1928.

9. Thomson, D.: Gonorrhea, London, Oxford University Press, 1923; cited by Pelouze, P. S.: Gonorrhea in Males and Females, Philadelphia, W. B. Saunders Company, 1939.

10. Gillick, F. G., Sulkin, S. E., and Stephens, L. J.: Common Error in Obtaining Specimens for the Cultural Diagnosis of Gonococcal Infection in the Female, Ven. Dis. Inform. **21**: 288 (Sept.) 1940.

11. An unlimited supply of this drug was made available by the Winthrop Chemical Company, Inc.

did not occur before the patient was discharged from the hospital she was given enough sulfathiazole for another course of therapy to be taken during her next menstrual period. This precaution was taken because preliminary observations suggested that menstruation may be responsible for an exacerbation of the infection.

Every patient showed some degree of cervical infection. Since many infections were associated with extensive erosions, an endeavor was made to restore and maintain a normal vaginal acidity (p_H 4.0 to p_H 4.2). The vaginal suppositories of beta-lactose boric acid described by Roblee [12] containing 80 per cent beta-lactose and 20 per cent boric acid powder in no. 11 veterinary capsules were used. One capsule was inserted into the vagina each evening at bedtime for twelve consecutive applications. Douches were not referred back to us because smears and cultures were still positive. A second course of sulfathiazole was started but had to be discontinued after the first day because the reaction mentioned was well developed on the morning of the second day. Laboratory examinations on the second patient were negative after one course of sulfathiazole alone. Menstruation ensued fifteen days later so that a second course of treatment was started but had to be stopped after the first day because severe and uncontrollable nausea and vomiting developed. It stopped spontaneously twenty-four hours later. The patient was discharged sixteen weeks later classified as a clinical cure.

Seven patients showed mild nausea and malaise which were relieved by the administration of 7.5 grains (0.5 Gm.) of sodium bicarbonate with each dose of

TABLE 2.—*Results of Sulfathiazole Therapy in Ninety-Four Cases of Gonococcic Infection*

	Number of Weeks After Admission to Hospital																			
	1		3		6		9		12		15		18		21		24		27	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Positive smear or culture	94	100	2	2.1	1	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Negative smear or culture	0	0	92	97.8	74	98.7	61	100	41	100	26	100	16	100	9	100	4	100	2	100
Lapse in attendance or closed without proof of cure	0	0	0	1	19	20.2	43	45.7	53	56.3	54	57.4	54	57.4	54	57.4	54	57.4	54	57.4
Cure	0	0	0	0	0	0	0	0	0	0	40	97.5	40	100	40	100	40	100	40	100

	Number of Weeks After Admission to Hospital									
	30		33		36					
	No.	%	No.	%	No.	%				
Positive smear or culture	0	0	0	0	0	0				
Negative smear or culture	1	100	0	100	0	100				
Lapse in attendance or closed without proof of cure	54	57.4	54	57.4	54	57.4				
Cure	40	100	40	100	40	100				

TABLE 3.—*Composite Results of Sulfathiazole Therapy in One Hundred and Ninety-Four Cases of Gonococcic Infection*

	Number of Weeks After Admission to Hospital																			
	1		3		6		9		12		15		18		21		24		27	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Positive smear or culture	194	100	6	3.1	1	0.51	0	0	0	0	3	1.5	0	0	0	0	0	0	0	0
Negative smear or culture	0	0	187	96.4	149	97.5	105	100	88	100	62	98.5	36	100	20	100	14	100	11	100
Lapse in attendance or closed without proof of cure	0	0	1	0.51	44	22	89	45.8	106	54.6	109	56	112	57.7	112	57.7	113	58.3	113	58.3
Cure	0	0	0	0	0	0	0	0	0	0	78	91.2	78	95.1	80	97.6	80	100	80	100

	Number of Weeks After Admission to Hospital									
	30		33		36					
	No.	%	No.	%	No.	%				
Positive smear or culture	0	0	0	0	0	0				
Negative smear or culture	5	100	1	100	0	100				
Lapse in attendance or closed without proof of cure	113	58.3	113	58.3	113	58.3				
Cure	80	100	80	100	80	100				

permitted during this period. Specimens for smears and cultures were taken during the last three days of local therapy. Beta-lactose was not repeated under any circumstances, nor was it ever given during menstruation.

TOXIC MANIFESTATIONS

Toxic manifestations were noted in 13 (6.7 per cent) patients. In 2 instances the drug was discontinued, in 1 because of a severe cutaneous reaction developing in the form of a painful urticarial rash. The circumstances associated in this instance were unusual. On admission to the hospital it was found that in addition to a gonococcic infection the patient had a pregnancy of approximately eight weeks gestation. No reactions were noted with the first regular five day course of sulfathiazole. Two days after therapy was completed signs of abortion threatened and she was immediately transferred to the City Hospital. Fourteen days after the completion of a spontaneous abortion she was sulfathiazole, thus permitting them to continue treatment. Three additional patients suffered mild fever reactions and complained of chilly sensations and nausea, but the temperature remained normal. They, too, were able to continue their treatment when given sodium bicarbonate. One patient had a mild urticarial reaction but was able to continue taking the drug.

Similar toxic manifestations resulting from the use of drugs of the sulfonamide series have been reported by Flippin, Schwartz and Rose,[13] Greenwood,[14] Mahoney, Wolcott and Van Slyke [15] and others.

EPIDEMIOLOGY

Sixty-three per cent of the patients were white and 37 per cent were Negroes; 46 per cent were between the ages of 21 and 25, 20 per cent were between 26

12. Roblee, M. A.: Vaginitis and Cervicitis, J. Missouri M. A. **34**: 285 (Aug.) 1937.

13. Flippin, H. F.; Schwartz, L., and Rose, S. B.: Comparative Effectiveness and Toxicity of Sulfathiazole and Sulfapyridine in Pneumococcic Pneumonia, Ann. Int. Med. **13**: 2038 (May) 1940.

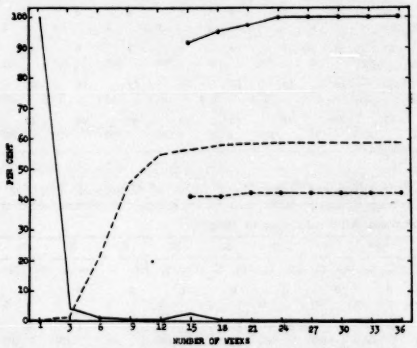
14. Greenwood, A. M.: Skin Manifestations Due to Sulfanilamide and Its Derivatives, New England J. Med. **224**: 237 (Feb. 6) 1941.

15. Mahoney, J. F.; Wolcott, R. R., and Van Slyke, C. J.: Sulfamethylthiazole and Sulfathiazole Therapy of Gonococcal Infections, Am. J. Syph., Gonor. & Ven. Dis. **24**: 613 (Sept.) 1940.

and 30, 14 per cent were between 31 and 35 and 18.5 per cent were under 21. The youngest was 18 and the oldest 60.

Syphilis was present in 26 per cent of the 194 patients treated for gonorrhea. Condylomata acuminata were noted in 5 patients and a diagnosis of fibromyomata uteri was made in 5 others. Chancroidal infection substantiated by a positive cutaneous reaction was found in 2 of the younger group and lymphogranuloma venereum was found in another 2. Each gave a strongly positive reaction to the Frei test. There were 1 perianal and 2 paraurethral abscesses. Seven members of the group were drug addicts, each giving a history of scanty or no menstruation since forming the habit. Two patients were in the first trimester of pregnancy.

Every patient was classified as having chronic gonorrhea with the exception of 2 who were given absolute bed rest because their infections were acute. The only death in the series occurred from other causes six weeks after release from the hospital. Five patients having Bartholin abscesses were kept under observation



Results of treatment of total number of patients under observation at end of "quarantine parole" period. Solid line indicates positive smear or culture; broken line, lapse in attendance or closed without proof of cure; dots and lines, actual percentage of patients cured; dots and dashes, percentage of total number of patients cured.

for from ten days to three weeks, but in no instance were positive smears or cultures obtained from any part of the genital tract; therefore they are not included in this report. Twenty-one per cent of the patients had been subjected to operations for some type of pelvic inflammation. Thirty-five per cent had had at least one full term pregnancy, 1 patient having been delivered nine times. Twenty-six per cent admitted one or more induced abortions, the greatest number being seven by a 23 year old white girl.

Forty-five per cent of the patients had gonorrheal infection of the cervix alone; 43 per cent had both cervical and urethral infections, while the remaining 12 per cent had infections only in the urethra.

ANALYSIS OF RESULTS

Special forms were prepared for recording all information pertinent to this study. In general, the plan suggested by Deakin and his associates [16] was used. The progress in each case was recorded at weekly intervals on the chart devised by Rogers Deakin in his study of the treatment of gonorrhea in the male. Information contained in the accompanying tables is the result of an analysis of these records.

Table 1 refers to the first series of cases in which the sulfathiazole–beta-lactose therapy was used. All smears and cultures taken during the first week were positive, whereas during the third week positive laboratory examinations were obtained in only 4 (4.4 per cent) cases, each of which was considered a recurrence and therefore was subjected to another course of treatment. From the sixth to the fifteenth week all laboratory examinations were negative. During the fifteenth week positive cultures were obtained in 3 cases which had been pronounced clinical cures, since they had fulfilled the aforementioned criteria. However, the possibility of reinfection was established before they were listed as new cases. All smears and cultures in those followed for longer periods of time were negative.

Whenever a patient failed to return to the clinic for weekly follow-up examinations an arrest order was issued and she was brought in by the police, unless she had left the city. This accounted for the fact that it was possible to have 47 per cent of the patients under follow-up observation at the end of the twelfth week and 41 per cent of them at the end of the thirty-sixth week.

Eighty-six and six-tenths per cent of those under observation at the end of the fifteenth week were considered clinical cures, while all patients under observation at the end of the twenty-fourth week were considered clinical cures.

Table 2 shows results of treatment with sulfathiazole alone. All smears and cultures were positive at the end of the first week; positive results were obtained in only 2 (2.1 per cent) cases during the second week; after the third week all laboratory examinations were negative. Forty-seven per cent of this group of cases were under observation at the end of the twelfth week, and weekly smears and cultures were still being taken in 46 per cent of them thirty-six weeks after admission to the hospital. Ninety-seven and five-tenths per cent of these cases were pronounced "clinical cures" at the end of the fifteenth week and were still considered as such after a period of nine months had elapsed.

After a detailed analysis of these two groups it was obvious that local beta-lactose therapy had not been a factor in their treatment. For this reason the 194 cases have been summarized as a composite group (table 3) and may be recapitulated as follows: Smears and cultures were positive in 6 cases during the third week and in only 1 case at the end of the sixth week. The positive results obtained in three cases during the fifteenth week have been previously explained. Forty-five and four-tenths per cent of the cases were still under observation at the end of the twelfth week, while 41.7 per cent of the entire 194 cases were still being observed at the end of the thirty-sixth week.

Ninety-one and two-tenths per cent of the total number of patients under observation at the end of the "quarantine parole" period (twelve weeks) were considered "clinical cures," having completed prescribed treatment and giving negative results. By the end of the twenty-fourth week all patients under observation were "clinically cured." The results are presented graphically in the accompanying chart.

16. Deakin, R.; Wortman, M. S., and Lawrence, J. V.: Medical and Social Research in Gonorrhea, Ven. Dis. Inform. **21**: 255 (Aug.) 1940.

SUMMARY AND CONCLUSIONS

1. The object of this investigation has been to ascertain the efficacy of sulfathiazole in the treatment of gonococcic infections in women. One hundred and ninety-four hospitalized patients were subjected to a carefully controlled study. Two methods of treatment were employed, one consisting of the oral administration of 60 grains of sulfathiazole daily for five days and a vaginal suppository containing beta-lactose and boric acid. The suppository was given once a day for twelve consecutive days. The second method of treatment consisted of the same dose of sulfathiazole given without the beta-lactose.

2. Every patient showing clinical evidence of a gonococcic infection that could be confirmed by laboratory examination was isolated for a period of at least two weeks in a special unit of the St. Louis City Hospital. Special forms for recording all information pertinent to this study were employed.

3. Toxic manifestations were noted in 13 (6.7 per cent) cases and were sufficiently severe in 2 of them to necessitate termination of treatment. The most pronounced reaction was in the form of a painful urticarial rash in 1 case, while uncontrollable nausea and vomiting developed in a second. All cutaneous manifestations disappeared within seventy-two hours after administration of the drug was discontinued. Nausea and vomiting ceased within twenty-four hours after medication was stopped. In 7 cases there were mild nausea and malaise which were relieved by the administration of 7½ grains of sodium bicarbonate for each dose of sulfathiazole. Mild fever reactions associated with chilly sensations and nausea were observed in 3 cases, all of which were relieved with sodium bicarbonate. In every case in which it was necessary to discontinue treatment reactions developed after the second course of medication was started.

4. One death in the series occurred six weeks after release from the hospital. This patient, a drug addict, had syphilis and acute malaria in addition to a gonococcic infection. Bartholin's abscess did not occur in this series.

5. Every case was classified as chronic gonorrhea with the exception of 2 in which there was an acute inflammation of the cervix, urethra and both adnexae associated with a severe febrile reaction. The cases classified as chronic gonorrhea presented no symptoms. This is in contradistinction to those classifications wherein the mere finding of a positive slide or culture warrants a diagnosis of acute gonorrhea.

6. Forty-five per cent of the patients had a gonorrheal infection of the cervix alone. In 12 per cent only the urethra was involved, while 43 per cent had both cervical and urethral infections. Every patient in whom the pelvic adnexae were present showed some type of chronic inflammatory condition.

7. A detailed analysis of the two groups of patients revealed that beta-lactose therapy had no influence on the treatment of gonococcic infection. Ninety-one and two-tenths per cent of the total number of patients under observation at the end of the "quarantine parole" period (twelve weeks) were considered "clinical cures." It may therefore be assumed that sulfathiazole in the treatment of gonococcic infections in the female is highly effective in a great majority of cases.

634 North Grand Avenue—4500 Olive Street—48 Municipal Courts Building.

ABSTRACT OF DISCUSSION

DR. WILLIAM H. VOGT, St. Louis: The authors have studied 194 cases of gonorrheal infection of the female and their results are most encouraging. The fact that these patients were hospitalized under a city ordinance and therefore had no opportunity for sexual relations during the course of treatment and also no chance of reinfection undoubtedly played an important part in obtaining the rapid cures. As I understand it, this report deals entirely with gonorrheal infections below the internal os. I wonder whether the authors have had any experience with this drug in the infection higher up in the pelvis. If equally good results can be obtained from this form of treatment in gonorrheal inflammation of the pelvis where it so often becomes necessary to sacrifice tubes and ovaries, the drug is truly to be considered a valuable addition to our armamentarium. The most serious complication in this group seems to have been a severe painful urticaria in 1 case of pregnancy associated with gonorrhea and 1 milder case of urticaria. All the other complications were mild nausea and malaise. Certainly one cannot criticize the drug on that basis. Serious conditions such as sulfhemoglobinemia, agranulocytosis and hemolytic anemia did not occur. No mention, however, was made of the need for the determination of blood concentration levels, and I am wondering whether these investigators did not think that this was necessary. In certain diseases associated with a high mortality and for which there is no reliable therapy, one may be justified in administering this drug in spite of some inherent risk and lack of facilities for determining the blood concentration. In less serious cases, however, such as gonorrheal infection, greater caution should be exercised in its use. I noticed that a discussion of the failure was omitted and I should be glad to have Dr. Fletcher say just what his plan of treatment has been in those obstinate forms of infection.

DR. WILLIAM BICKERS, Richmond, Va.: I am sorry but I must disagree with the speaker. In the last year I have accumulated a report on 50 acute cases of gonorrhea in women. Each alternate 1 was treated with sulfathiazole. At the end of the treatment period (and the treatments were well controlled by smears and the like) I myself evaluated each case, not knowing at the time of examination which patient had received sulfathiazole and which 1 had not. The conclusion is that we were not able by reviewing the histories of the patients, that is as to time when the smears became negative, the disappearance of dysuria, the absence of complications, the loss of days from work, and all of the other criteria by which we estimate the cure of gonorrhea in women, to make any distinction between the group treated by sulfathiazole and those that were not.

DR. PAUL F. FLETCHER, St. Louis: In answer to Dr. Vogt's question relative to treatment in obstinate cases, we found persistent foci of infection in the urethra and in the cervix in 8 cases. In 2, conization of the cervix was necessary. In 6, destruction of Skene's ducts with an electric cautery was employed. Those were the only obstinate cases in the series. Two cases showed inflammatory reaction. In each of them there was an acute or subacute bilateral salpingitis. The patients were deliberately subjected to the same course of treatment and by the time they left the hospital, within two weeks, all pelvic findings were essentially negative. With regard to Dr. Deakin's question relative to a method of controlling prostitutes after they are released from the hospital, two methods are being tried whereby they might be more effectively controlled, but time will not permit going into that now. In reference to the comments of my second discusser, I should like to say again that every 1 of these patients was a prostitute. All except 2 cases had to be classified as chronic gonorrhea. There is no question that close supervision and hospitalization were important factors. In contrast to this group, we have records of some 300 prostitutes who were treated with sulfanilamide and local therapy. By comparing the two groups of patients, the figures and facts speak for themselves. Our impressions and conclusions are based strictly and carefully on these facts. That is why we think sulfathiazole is effective in the treatment of gonorrhea in women in a rather high percentage of cases.

TRAUMATIC CHANGES IN THE RETINA, CHOROID, NERVE HEAD AND VITREOUS

ARTHUR J. BEDELL, M.D., D.Sc., LL.D.
ALBANY, N. Y.

Ocular tragedies are increasing in industry, in the home, in the school and in travel; so there is need for a review of the traumatic changes in the fundus and their differentiation from the nontraumatic. The application of facts learned in private practice is of immense practical value in times of stress, for it enables the alert physician to interpret the signs of early damage as well as to appraise correctly the end results.

The dominant signs of ocular injuries are hemorrhage, edema, ischemia and destruction of tissue. Their amount, location and extent provide the unpredictable elements.

A foreign body may strike the eye with varying force and from various angles. There is no accepted, dogmatic rule for determining the resulting changes in the fundus, but Lagrange, in his monumental sketchbook, presented conclusions well substantiated by his drawings and for certain war injuries laid the foundation for future advances.

In this clinical review an attempt is made to present the alterations in the fundus so clearly that the ophthalmoscopic patterns will become living designs.

Whenever a person has an accident to the eyes or the head he should be examined by one competent by training and a continuous experience to render an opinion. It must be understood that many injuries produce immediate, visible changes while with others the alterations are delayed and reexaminations are therefore imperative.

It will be shown that holes in the macula can result from injury, from inflammation of the uveal tract or from disturbance of the retinal circulation. Therefore, when one or more of these agents are present great care must be exercised to evaluate properly the effect of trauma.

TRAUMATIC HOLE

The traumatic hole at the retina is unilateral, except on rare occasions when both eyes are injured. This is a fundamental concept of the traumatic hole. The hole varies greatly in size, from $\frac{1}{6}$ to at least 2 disk diameters. The border may be a uniform gray, speckled with white spots, a few isolated dots, scattered pigmentary collections or thick gray tags. The crater ranges from a shallow excavation to a deep punched-out hole. The floor, or base, of the crater varies from dark red to pale pink and from a uniform granular appearance to one presenting dark ridges of irregular pigmentation, dense almost uniform sheets of pigment or scattered overlying white spots or films, or combinations of these, so that the floor may be smooth or rough. Finally, there are circummacular changes, such as pigmentary deposits and absorptions or massive connective tissue circles. It is therefore apparent that traumatic holes at the macula are not identical; further, it should be remembered that the macula does not always occupy the same position, for it may be either above or below the classic location.

If, then, the traumatic hole is visualized as a more or less sharply outlined red macular area with a distinct rim with tags on or about it, a physical differentiation must be made from a hole caused by circulatory or inflammatory changes, and, although no clearcut distinction is possible, the margin of error can be reduced to a minimum in this way. The appearance of every hole should be subjected to a critical analysis and then the possible causes considered.

The inflammatory hole is always unilateral unless there is bilateral inflammation. The evidence of involvement of the uveal tract: adhesions of the iris, vitreous opacities, complicated cataract and signs of choroidal and retinal disease, is always present. There are no significant differences in character between this hole and the others.

Circulatory holes are usually smaller than the traumatic ones and may be so small as to be overlooked because of the slight difference in color. They are always associated with changes in the retinal vessels ranging from little alterations to severe atheromas. They are bilateral, but one should not be misled if a hole is not present in both eyes the first time one examines a patient, for, although often circulatory holes are bilateral when first discovered, years may intervene before the second eye becomes involved. Delayed involvement of the second eye has been proved photographically in a sufficient number of cases to warrant emphasis, especially as the visual reduction is often little. The development of a circulatory hole from an overlying flat gray haze to cystic degeneration and finally to a clearcut hole has been observed. Often the rim is sloping. The crater may be shallow and scarcely measurable without a slit ophthalmoscope or a binocular one. Red-free light focused to transilluminate the macular area will often disclose the hole before it can be seen by the ordinary diffuse brilliant light. A delicate vitreous cloud may be so placed as to suggest the rim of a hole and may so obscure the border that the hole seems small.

In certain hypertensive patients without or with definite sclerosis a delicate, golden yellow, fine-meshed net forms about the uncovered macula, which stands out clearly as a more or less circular red disk. Neither this nor a dark macula should be mistaken for a hole. Careful ophthalmoscopic analysis will prevent these mistakes. A patient with hyperpiesia may receive a direct blow on the eye, and later a hole may develop in the macula. The relation of the blow to the development of the hole presents a medicolegal problem of considerable importance and calls for a careful consideration of the entire subject.

The hole that is found in detachment of the retina is curiously different. If the retina is in great folds the red hole seems to expand, contract and change its size every time the waving sheet moves. At one instant it is round, at another oval and at another a mere slit. When the retina is thick, gray and far displaced from the choroid the difference in level is striking and the dark crater is vivid against the whitish gray retina.

When the macula is involved after an operation or in a flat detachment it is usual to find many small, slightly elevated, light-reflecting cysts or the retina may be honeycombed throughout the entire region. There is no difficulty in distinguishing this kind of macular hole from the others, and whether it should be considered traumatic must be determined after the cause of the detachment is decided.

Read before the Section on Ophthalmology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

Before I leave the discussion of holes, it is necessary to mention the small one found in children with amblyopia and the clearly outlined hole in patients with glaucoma.

The macular hole is common and is seen far more frequently than published reports indicate.

RUPTURE OF CHOROID

Rupture of the choroid may be completely overshadowed by a hemorrhage, an exudate, edema or all three, so that no suggestion of an underlying tear is evident for several days. In the least complicated form there is an isolated yellow-gray swelling without hemorrhage. As the swelling disappears a yellowish band becomes apparent, usually more or less concentric with the disk, often to the temporal side but not rarely to the nasal. Ruptures may be single or multiple, more or less parallel to each other, angular, horizontal or stellate.

The most extensive tears follow severe direct blows which cause choroidal and retinal bleeding and detachment of the retina. The usual outcome is restoration of the retina to its former position, and if the rent does not involve the macular region, serviceable, functional recovery. The tear may leave areas of retinal and choroidal atrophy, or the separated yellow bands may become dense fibrous plaques. The color of the rupture depends on the time which has elapsed between injury and first examination. Early after injury the rupture is yellowish pink, with an indefinable margin, while later it is white, with sharp edges. Some cases have been reported in which pigmentation was said to be present immediately after an injury. Considered from a practical standpoint the reports cannot pass unchallenged, because the immediate presence of pigmentation is inconceivable, and pigmentation is of considerable value in the medicolegal determination of the time factor. Such unconfirmed statements are unjustified.

A rupture may shrink, remain stationary or even enlarge. Every case is instructive and of permanent value to the clinician who records the changes by means of photographs, for the patterns are often complicated in outline and surface, so that verbal descriptions are unsatisfactory. When a rupture of the choroid is combined with pigmentary degeneration, it is fair to assume that both have been caused by an injury.

Traumatic rupture of the choroid must be differentiated from the spontaneous choroidal tears which occupy the macular and paramacular regions in persons with high myopia. The refractive error, the angular rents (often with intact choroidal vessels either on the base or along the side of the deepest portion) and the uninterrupted state of the retinal vessels as they cross over the gaps are pathognomonic and are sufficient to exclude the diagnosis of a traumatic lesion.

Another confusing picture is that caused by tuberculous infiltrations, in which the pigmentation and elevation of portions of the center of each scar, with a superficial film over it, such as I first described in 1929 in a photographic exhibit on choroiditis, make the classification possible.

RUPTURE OF THE RETINA

Rupture of the retina is seldom diagnosed, for two reasons: It is difficult to see, and it is rare. Occasionally one finds a delicate interrupted superficial break in the retina after the traumatic edema has subsided. The break is only slightly less pink than the rest of the fundus, the pigmentation is limited and vision often is unimpaired. Most often the tear is a horizontal line in the macular area which shows little or no tendency to close.

BERLIN'S EDEMA

The severe, acute macular edema first well described by Berlin causes transitory blindness when it is sufficiently great to blanch the retina in a more or less circumscribed macular area. Occasionally the pallor assumes the intensity of an embolic closure; more often there is a faint bloody effusion which gives a reddish or yellowish tinge to the swelling. When this is extreme it causes an elevation of the macula and a central scotoma. Occasionally there are collections of fine granular pigment.

EMBOLISM OF CENTRAL RETINAL ARTERY

Sudden loss of vision from embolism of the central retinal artery, with all its classic signs and symptoms, has been observed to follow immediately a forcible blow on the eye.

CHOROIDAL HEMORRHAGE

A direct compression of the globe may cause choroidal hemorrhage, which is seen as an oval or round bulging of the retina. If it is large the overlying retina is gray or almost milky white. When the borders are sharply outlined the retinal vessels curve over the surface. The hemorrhage may have a frayed edge, or the retina may be detached over the blood. There is no tendency for the blood to break through the retina, and the clinical course of absorption is one of decrease in size and thickness until the hemorrhage disappears. In some cases an outer granular ring shows where the blood has been, while in others the raised surface looks like melting snow. The hemorrhage frequently bulges over the borders of the disk as a smooth, glistening, dark red prominence.

GLAUCOMA

Increased ocular tension following a blow may pass unnoticed unless the elevation is great or rapid or both. In some cases hyphemia develops either immediately after the accident or some days later. If glaucoma is recognized and an operation performed early, the changes in the fundus are few, but if surgical intervention is delayed large deep retinal hemorrhages and choroidal extravasations are found, with a total glaucomatous excavation of the nerve.

TRAUMATIC ATROPHY OF THE OPTIC NERVE

Traumatic atrophy of the optic nerve has been described and recognized for many years. It may be partial or complete, sudden or gradual, and may be a complication of a severe injury of the head, a blow to the face or a seemingly trivial fall to which little attention is paid until the dimness of vision becomes apparent. This atrophy must be distinguished from that caused by the usual nontraumatic agents, which include syphilis, increased cranial pressure, the neuritides in general and embolism of the central retinal artery. The papilla may retain its normal color for a long time after an injury, although cases have been reported in which the nerve head turned white immediately after an accident.

AVULSION OF THE OPTIC NERVE

Avulsion of the optic nerve is most often the result of a gunshot wound when the bullet, as it passes through the skull, cuts one or both optic nerves. When the

nerve is completely severed the region of the papilla is a great white depression. Usually, a thick, white, elevated connective tissue band of variable width and excessive pigmentation surrounds the scar. When the nerve is partially detached from its insertion the amount of scar tissue makes it look like a deep glaucomatous excavation. White proliferating bands and depigmentation of the choroid similar to those of traumatic retinochoroiditis are often prominent.

The end results of total or partial avulsion are so striking that once seen they will always be remembered. Partial avulsion is the more difficult to diagnose.

CONGENITAL COLOBOMA

When congenital coloboma of the disk and the choroid is associated with a marginal zone of depigmentation, care must be taken to avoid calling it a traumatic lesion.

RETINITIS PROLIFERANS

Retinitis proliferans may follow a penetrating wound and show as white strands adherent to the disk and at the points of contact in the retina. The bands may be thick and smooth, with many vessels on them, or delicate and avascular. They may be in any portion of the fundus but seem to have a predilection for the peripapillary region. In some cases the bands of proliferation are dark, almost black, beneath more superficial, lighter webs. They are distinguished from the retinitis proliferans of tuberculosis by their isolation and by the tendency to remain stationary. In tuberculosis recessions are not infrequent. In the retinitis proliferans of diabetes the sheets are denser and more vascular, for the vessels are in many layers, while in hypertension and syphilis changes in the retinal vessels are always present.

TRAUMATIC MACULAR PIGMENTATION

Pigmentary changes in the macula may be linear or spotlike. The fovea may be brownish yellow, in contrast to the pale red fundus. The changes may follow the extraction of an intraocular foreign body and may be a primary retinal change or a secondary terminal effect. Macular retinal hemorrhage, juvenile macular choroiditis, retinochoroiditis and disciform degeneration may suggest by their location and shape the traumatic changes. Careful inspection will distinguish one from the other.

TRAUMATIC RETINOCHOROIDITIS

Traumatic retinochoroiditis with permanent visual loss may appear under several more or less distinct forms. The areas may be widespread and may cause extensive destruction, for they follow either direct contusion or compression of the globe. Immediately after the accident the retina is white and swollen, with a few hemorrhages on its surface. The pigmentation does not become apparent until the swelling has disappeared. In unusually bad cases there is rupture of the choroid and detachment of the retina. It takes several weeks for a severe lesion to become resolved. Traumatic retinochoroiditis is differentiated from areolar sclerosis by two facts: First, in sclerosis the border is sharp and clearly separates the diseased from the uninvolved portions of the fundus, whereas in traumatic retinochoroiditis the border may be pigmented in only a part of its circumference and usually blends with the surrounding retina. Second, in sclerosis the floor almost always consists of grossly sclerosed choroidal vessels with or without scattered pigmentation, and sometimes in cases of long standing the vessels are reduced in number, while in traumatic retinochoroiditis the choroidal vessels are not sclerosed and, as a matter of fact, are notably reduced in size and number. In nontraumatic retinochoroiditis of the exudative type thick white scars with dense pigmentations are often encountered.

PENETRATING WOUNDS

Penetrating wounds of the globe may produce localized damage at the site of puncture; these include pigmentation, scars and proliferation. When the eyeball is penetrated from the rear, unusual rounded tubular membranes often project through the distended and stretched coats like fingers through a dark, heavy woolen cloth. Anterior, or lateral, perforations are much more common, and if the wound is back of the lens and is not infected, a scar is found, varying from a single line to a wide band. The latter leads to total detachment of the retina.

CHANGES DUE TO FOREIGN BODIES

Changes caused by intraocular foreign bodies form a class of their own. When a BB shot enters the globe, it may cause considerable destruction of the retina and choroid, or after striking the retina it may settle in one of the lower quadrants. When it does, if the patient is placed on his side the force of gravity will cause the shot to become lodged in the sclera and produce a secondary inflammatory reaction. As soon as this occurs an incision over the most prominent point will enable the surgeon to remove the shot with little added trauma.

If the foreign body is steel or iron, it may be possible to see it in the vitreous, more commonly in the retina or, when it penetrates the retina, in the choroid or the sclera. Immediately after the injury the foreign body may be covered with blood, and as the hemorrhage becomes absorbed organization of exudate may take place. If the metal is retained long siderosis develops. The degree of reaction in the fundus varies with the size of the body, the force of contact and whether the object was infected.

When the foreign body is copper it causes the characteristic retinal change of small discrete paramacular yellow spots. These may become less evident, but if the foreign body cannot be removed the reaction increases and the deposits become larger.

Wood splinters provoke a severe exudative inflammation, while glass induces little reaction.

It is obviously impossible to do more than suggest some of the changes in a paper of this size. When the foreign body is lodged in the sclera the resulting hole in the retina may lead to detachment, but if the foreign body is removed and the detachment treated the results are favorable. It must not be forgotten that a foreign body may enter one side of the eye, strike the retina and rebound to the other and produce some unusual scars.

DETACHMENT

Only a summary statement is made regarding traumatic retinal detachments, for there are as yet no absolute pathognomonic signs which distinguish those of spontaneous origin, such as occur in the myope, the gravid woman or the person with a malignant neoplasm of the uveal tract, from those ascribed to physical strain.

Isolated perimacular retinal edema and preretinal edema have been called detachment. Attention to the distinguishing sharp reflex lines from the retina in the former and from the vitreous in the latter are important aids in differentiation. Furthermore, the clinical course is entirely different, for with detachment there is usually progression, whereas with retinal edema the area may enlarge but soon contracts, while with preretinal edema the dome of the swelling expands rapidly, then flattens and disappears. Shallow, flat, finger rolls of detachment are easy to differentiate from the bands caused by folds in the retina because of the irregularity of direction and size as well as the gray color, for folds are more often streaklike and of a yellow tinge. Large globus detachments are easily recognized as they wave on motion of the eyeball, for they have wrinkles in the surface and dull reflexless retinal vessels. The literature is replete with details concerning retinal detachments, so that it is not included.

The retinal vessels may pass over great rents in the retina without change in direction and often are so taut that they indent the lips of the tear, or they may be torn, causing hemorrhage and eventually changes in their caliber.

CHOKED DISK

The diagnostic value of increasing edema of the disk has been previously stressed, for rising intracranial pressure must be reduced or serious progressive damage to the optic nerves will follow. Again I urge more care and more frequent study of the fundi in every case of fracture of the skull.

TRAUMATIC ARACHNOIDITIS

In cases of traumatic arachnoiditis a swollen papilla with a crown of blood is sufficiently alarming to demand constant observation. If the papilledema does not quickly subside, surgical measures should be employed. In this connection caution is advised against the promiscuous injection of air for encephalograms, for the subsequent elevation of intracranial pressure may cause papilledema, with a retinal hemorrhage.

A striking confirmation of the fact brought out by Parker's experiments, that papilledema first occurs in the eye with the lower ocular tension, may be observed in the case of a large scleral cut which heals with separated scleral lips and a swollen disk.

Finally, attention is focused on pulsating exophthalmos, either spontaneous or traumatic. Frequently diplopia is the first symptom. Examination discloses the bruit heard over the head, and as the blood vessels dilate the eye bulges forward, the conjunctival vessels become full, the vessels of the lid become tortuous and enlarged and the great orbital vessels form immense blood channels. The fundus is then congested, and the vessels are usually a carmine red and the pulsations forcible. A sign of some prognostic value is the persistence of a definite fundus congestion after fracture of the skull.

SUMMARY

The fundus patterns made by trauma are both numerous and destructive. Those resulting from loss of tissue are holes in the retina and ruptures of the choroid.

Those from disturbed circulation include holes, macular pigmentations, chorioretinitis and embolisms.

The special inflammatory reactions are retinitis proliferans and scars.

Actual cutting includes avulsion of the optic nerve, and the result of pressure on the nerve either in the orbit, the bony canal or the brain is papilledema or atrophy.

The nontraumatic changes are contrasted with those caused by injury.

CONCLUSIONS

An ophthalmoscopic examination is imperative in every case of injury to the head or the eye.

Meticulous care should be taken in the original description of each case, special notations being made regarding the time interval, the type of injury and, if possible, the direction of the force and the end result. Obviously, no report is complete without a clear photograph.

Every patient presents a complicated individual condition which demands an exact diagnosis based on a comprehensive knowledge of the possibilities.

The aim of all examinations is to establish whether the changes are traumatic or nontraumatic, for the maintenance of the delicate balance of justice must rest on the sure foundation of knowledge, not on bias.

ABSTRACT OF DISCUSSION

DR. PARKER HEATH, Detroit: As Dr. Bedell has pointed out, differentiation of trauma from other similar lesions is becoming increasingly important with the spread of compensation laws. The point made in the detachment of the retina of differences in color in the background in patches is important. In an organ whose tissues have such concentrated importance as in the eye, not infrequently the initial lesion is less important than the subsequent inflammatory repair. The effect of trauma to the eye is poorly classified in literature. There would seem to be three main approaches to the subject: 1. Clinical study with case notes, repeating these studies so that the whole course of the disease can be noted. This study is of immense value and is the method chiefly emphasized by those reporting their studies in atlas and in literature. An advance in this field will be made by more correlation with the clinicians, as shown by the studies of Wagener, a cheaper fundus camera and color photography with a film which will not fade. An example of case study, though incomplete, is that found in Lagrange's book describing war injuries, wherein he attempts to show the effect of missiles striking near the eye and taking a certain course; also the results from exposure to explosive forces. 2. The second form of study is that of correlating physiology and pathology with the changes in the eyes, using the same methods. An attempt along this line is a correlation of histopathology in the atlas of Guist, and a valuable correlation of histology and clinical data is that of Temple University. This attractive field has scarcely begun to be explored, although the source of material is as common as the general autopsies. The difficulty here is the effort involved—especially the studies of the eye before death. 3. The third field, still less explored, is that concerning the changes in the fundi from trauma in experimental studies. The possibilities here are great for adding valuable knowledge. I would close with the plea that, in addition to such fine clinical studies as Dr. Bedell's, other correlated ophthalmoscopic findings with pathology and physiology of the eye and also more experimental studies be undertaken in the field of ocular trauma.

DR. MORRIS DAVIDSON, New York: There are two aspects to the presentation by Dr. Bedell: The first is the place of fundus photography in ophthalmology. The splendid series of photographs leaves no doubt as to its value for teaching purposes. Photographic documentation for medicolegal purposes is also of great advantage. There are apparent limitations. One is the small area a fundus camera takes in. Furthermore, in the whole series of slides there wasn't one peripheral fundus

lesion. Evidently the camera finds it difficult to pick up the peripheral fundus lesion. The fundus is a large area, and it is misleading for the student to see the small posterior pole of the fundus instead of the whole fundus. Every ophthalmologist should practice some method of graphic recording of his observations. Every one of us makes some kind of a crude sketch of an observation. The available record forms have never been satisfactory, and out of my own needs I have evolved a topographic chart for recording eye injuries for the New York State Department of Labor. My colleague Dr. Goldberg, at the New York State Department of Labor, and I have tested ourselves as to our ability to identify a particular fundus lesion etiologically, without the benefit of a complete eye examination, including a slit lamp study of the anterior segment, and without the help of the concept of the anterior segment contusion syndrome. We were greatly disappointed in our diagnostic skill. It is in contusions where most of the controversies as to the traumatic or nontraumatic etiology of eye lesions occur. I should like to call attention to the reality and value of this syndrome. It consists in a train of lesions, anatomically related, in the pupils, iris, lens, vitreous and fundus periphery. Not every contusion presents all lesions, but two or more are found in every case.

DR. M. M. CULLOM, Nashville, Tenn.: I wish to express my gratitude to Dr. Bedell for his great work on the fundus and the beautiful way he has pictured it. I also want to ask his opinion, and yours, about a medicolegal case. A year ago a man came into the office with a history that while at work he and several of his co-workers were lifting a heavy timber. One of the men slipped and threw almost the whole weight of the timber on him, causing him to make a great effort to hold it up. In a few minutes he said "I can't see out of my right eye." On examination two days later he presented a picture of an embolus in the central artery. I gave it as my opinion that it was the strain that brought about the embolus. I was called to court to testify in this case. I consulted all the books I had in the office, and not one of them gave such a cause for embolus. The lawyer asked me whether I knew any authority that backed up my opinion. I couldn't answer that question very well. However, I found later that Adams Frost gives strain as a cause for embolism of the central artery. Dr. Bedell brought out the question of trauma in connection with embolism of the central artery. A week ago a man of 55 came in with a perfect picture of embolus. His history was that he had been on a spree for a week and had gone to the hospital to sober up. I had the man carefully examined and every test that we made was negative. His heart and blood vessels and tension were normal. The urinalysis was normal and Wassermann reaction was negative. There was nothing we could find that might account for it.

DR. ARTHUR J. BEDELL, Albany, N. Y.: I wish to thank Dr. Heath for reading the paper carefully, and for his timely discussion. It is very important that we keep in mind the suggestions made by Dr. Heath in relation to the study of clinical material, and particularly the correlation of the physiologic and pathologic findings. If we are to make experimental studies, then the results should be photographed and interpreted by a competent examiner. I appreciate Dr. Davidson's discussion, but as the subject is only fundus lesions I will not speak about the anterior segment syndrome. Photographs are made most often of central lesions, but that does not mean that we cannot take pictures of the fundus periphery. Dr. Davidson's diagram showed only the central field. Dr. Cullom reports an interesting clinical case. The patient lifted a heavy weight and immediately went blind. I believe Dr. Cullom can honestly and fairly go before the court and say that the blindness was caused by the exertion of lifting the great weight. In closing I will quote one paragraph, for it is very vital: "The aim of all examination is to establish the truth as to whether the changes are traumatic or nontraumatic, for the maintenance of the delicate balance of justice must rest on the sure foundation of knowledge, not bias."

RADIATION THERAPY IN CARCINOMA OF THE LUNG

WILLIAM V. TENZEL, M.D.
NEW YORK

Radiation therapy for primary carcinoma of the lung has not been effective as a curative agent. However, its usefulness in palliation and in prolonging life should not be overlooked. Even in these spheres the value of radiation therapy has been challenged. Overholt [1] of the Lahey Clinic believes that radiotherapy shortens the life of patients with cancer of the lung; Portmann [2] of the Cleveland Clinic states that radiotherapy may result in symptomatic relief but not in prolongation of life, while Craver [3] of the Memorial Hospital, on the basis of 178 cases, reports that radiation therapy gives symptomatic relief and prolongs life.

TABLE 1.—*The Relationship Between the Histologic Classification and Sex Incidence*

Sex	Epidermoid Carcinoma		Adenocarcinoma		Anaplastic Carcinoma		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Male	94	90	27	54	29	75	150	78
Female	11	10	23	46	8	24	42	22
Total	105		50		37		192	

TABLE 2.—*The Duration of the Disease from Onset of Symptoms to Diagnosis for the Various Histologic Types*

Cases *	Histologic Type	Irradiated		Not Irradiated	
		No. of Cases	Months	No. of Cases	Months
102	Epidermoid carcinoma	41	6	61	8.5
50	Adenocarcinoma	16	4	34	6
37	Anaplastic carcinoma	11	4	26	4
189	Weighted average	68	5.5	121	5.7

* Three patients were excluded—2 had pneumonectomies and the third an early lesion giving no symptoms and accidentally discovered at autopsy.

The present report based on an analysis of 192 treated and untreated primary carcinomas of the lung which had been examined post mortem at Montefiore Hospital from 1921 to 1939, demonstrates the value of radiation therapy in prolonging life. It was felt that autopsy material permitted a more accurate estimate of the influence of radiotherapy on the duration of life, especially as a comparison was possible between treated and untreated patients.

MICROSCOPIC CLASSIFICATION

The cases were divided into three groups according to the microscopic character of the tumor. Of the 192, 50 were classified as adenocarcinomas, 105 as epidermoid carcinomas and 37 as anaplastic carcinomas (table 1). The adenocarcinomas included types forming mucus (fig. 1), and those not forming mucus (fig. 2). The epidermoid carcinomas were either the

From the Department of Radiation Therapy, Montefiore Hospital.

Read before the Section on Radiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

Dr. Maurice Lenz gave the author many helpful suggestions; Dr. David Marine gave his permission to use this material, and Dr. Samuel Rosen assisted in classifying the specimens.

1. Overholt, R. H.: Curability of Primary Carcinoma of Lung; Early Recognition and Management, Surg., Gynec. & Obst. **70**: 479 (Feb. No. 2 A) 1940.
2. Portmann, U. V.: Cleveland Clin. Quart. **7**: 119 (April) 1940.
3. Craver, L. F.: Bronchiogenic Carcinoma, Am. J. Roentgenol. **43**: 469 (April) 1940.

typical squamous cell keratinizing carcinoma (fig. 3) or the nonkeratinizing or basal cell type (fig. 4). The anaplastic group consisted of the spindle cell variety (fig. 5) and the round cell type (fig. 6). Occasionally the classification was difficult because two or more

Fig. 1.—Adenocarcinoma, mucus forming.

histologic types were present in the same tumor, and even in the same microscopic field. Classification of these cases was determined by the predominating microscopic characteristics of the tumor.

TABLE 3.—*Period in Months Between Onset of Symptoms and Death*

Cases	Histologic Type	Irradiated		Not Irradiated	
		No. of Cases	Months	No. of Cases	Months
102	Epidermoid carcinoma	41	16.5	61	11.6
50	Adenocarcinoma	16	11	34	7.5
37	Anaplastic carcinoma	11	13.5	26	7.7
189	Weighted average	68	15.0	121	10.0

DURATION OF DISEASE WITH AND WITHOUT IRRADIATION

A comparison was made between the irradiated and the untreated patients. There were 121 untreated and 68 irradiated patients. In both the treated and the untreated patients an average period of five and one-half months elapsed between the onset of symptoms and the diagnosis, as seen in table 2. This period was somewhat longer for the epidermoid carcinoma.

The average duration of life from onset of symptoms to death for the irradiated patients was fifteen months and for those not given irradiation only ten months (table 3). The survival period was longest in epidermoid carcinoma: sixteen and one-half months for the irradiated and eleven months for the nonirradiated patient. It was shortest in adenocarcinoma: eleven months for the irradiated group and seven and one-half months for the nonirradiated group.

The effectiveness of radiotherapy in prolonging life is further illustrated by a comparison between the number of treated and the number of untreated patients

TABLE 4.—*Effect of Irradiation on the Survival Period*

	Histologic Type							
	Epidermoid Carcinoma		Adenocarcinoma		Anaplastic Carcinoma		Total	
	Irradiated	Not Irradiated	Irradiated	Not Irradiated	Irradiated	Not Irradiated	Irradiated	Not Irradiated
Number surviving more than one year	23	16	5	6	6	4	34	26
Per cent surviving more than one year	56	30	31	18	55	21	50	21

alive more than one year after the onset of symptoms. As seen in table 4, 50 per cent of the irradiated group were alive at the end of one year, while 21 per cent of those not given radiation therapy survived this period.

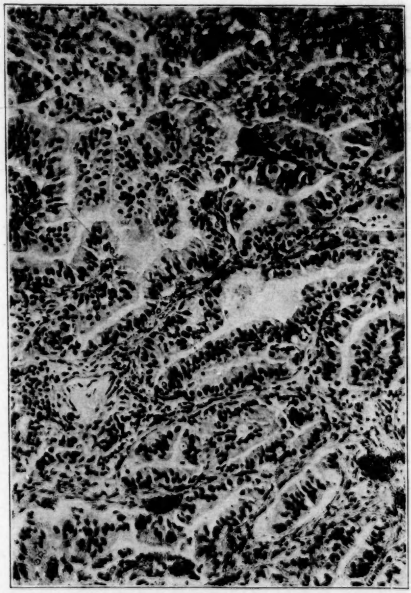


Fig. 2.—Adenocarcinoma, nonmucus forming.

THE RELATIONSHIP OF TUMOR DOSE TO SURVIVAL PERIOD

The voltage, target skin distance, filter, size and number of portals, dose and interval between treatments varied from case to case, depending on the extent of the lesion and the general condition of the patient. Since

there were so many variables, the treatment is best described by giving the total dose received by a definite point in the affected lung. An arbitrary point was chosen located 10 cm. from the anterior, posterior and

Fig. 3.—Squamous cell carcinoma, keratinizing.

lateral walls of the chest. The dose delivered to this region was called the tumor dose. In most cases this point will lie somewhere within the tumor. It should be understood that the tumor dose is an approximation. Table 5 shows the relationship of the tumor dose to the

TABLE 5.—*Relation of Tumor Dose to Survival Period*

	Dose in Roentgens						
	0-1,000	1,001-2,000	2,001-3,000*	3,001-4,000	4,001-5,000	5,001-6,000	6,001-7,000
Number of cases *.....	12	14	13	9	7	7	1
Average survival in months.....	10.5	11.5	12	13	14	22	12

* One patient whose case is not included here survived fifty-one months.

survival period in cases in which roentgen treatment was given. As the tumor dose increases there is a definite and progressive increase in the survival period. When the tumor dose was 1,000 r or less, the survival period was about the same as in the untreated group. As the tumor dose was increased, the average survival period was lengthened. With from 1,000 to 2,000 r, the survival period was eleven and one-half months; with from 2,000 to 3,000 r, twelve months; with from 3,000 to 4,000 r, thirteen months; with from 4,000 to 5,000 r, fourteen months, and with from 5,000 to 6,000 r, twenty-two months (table 5). For each dosage group the number of cases is too small to make a positive statement, but the results suggest the survival period increased with increasing dosage.

METASTASES AND INFECTION

The method of treatment and the end results were influenced by the condition of the patient and the pres-

TABLE 6.—*Metastases to Various Organs*

Organ	Epidermoid Carcinoma		Adenocarcinoma		Anaplastic Carcinoma	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Liver.....	29	28	27	54	18	49
Lungs.....	20	19	23	46	9	24
Adrenals.....	21	20	22	44	16	43
Kidney.....	14	13	14	28	7	19
Pleura.....	18	17	16	32	9	24
Pericardium.....	13	12	15	30	10	27
Epicardium.....	2	2	3	6	2	5
Heart.....	8	8	4	8	2	5
Brain.....	6	6	14	28	3	8
Pituitary.....	..	..	3	6	..	..
Esophagus.....	7	7	2	4	1	3
Diaphragm.....	5	5	6	12	2	5
Spleen.....	7	7	9	18	3	8
Spinal cord.....	1	1	2	4	..	..
Peritoneum.....	3	3	5	10	..	..
Thyroid.....	4	4	5	10	4	11
Pancreas.....	3	3	5	10	4	11
Intestine.....	2	2	3	6	5	14
Stomach.....	1	1	2	4	..	..
Gallbladder.....	..	..	1	2	1	3
Ovary.....	..	..	4	8	1	3
Parathyroid.....	..	..	1	2	..	..
Skin.....	12	11	3	6	6	16

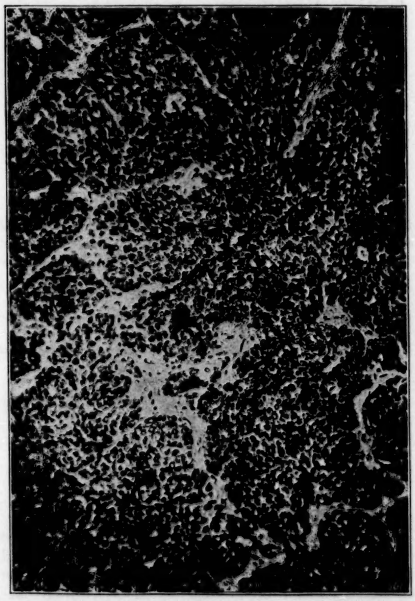


Fig. 4.—Squamous cell carcinoma, nonkeratinizing.

ence of distant metastases. As seen from tables 6, 7 and 8, carcinoma of the lung gives rise to widespread metastases to the skeletal system as well as to all other parts of the body. There was relatively only a small

number of patients in whom the disease remained local. At autopsy 92 per cent of the adenocarcinomas and anaplastic carcinomas had distant metastases. This would indicate that there is little chance for successful

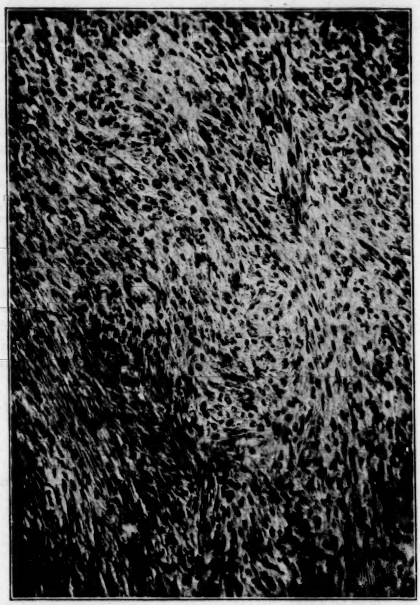


Fig. 5.—Anaplastic carcinoma, spindle cell.

therapy in these two groups. The possibilities appear to be greater in the epidermoid group, as one third of these patients had no distant metastases at autopsy.

Unfortunately, epidermoid carcinoma is frequently associated with local infection. It is an exuberant intra-

TABLE 7.—*Metastases to Lymph Nodes*

Region	Epidermoid Carcinoma		Adenocarcinoma		Anaplastic Carcinoma	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Hilar nodes	62	60	32	64	29	79
Cervical glands	12	11	14	28	8	22
Axillary glands	3	3	4	8	2	5
Inguinal glands	2	2	3	6	..	..
Retroperitoneal	3	3	7	14	10	27

bronchial growth frequently occluding the bronchus early, with resultant atelectasis, retention of secretions and infection. The tumor even in the very early stages has a tendency to undergo central necrosis and liquefaction. At autopsy, abscess of the lung was present in about 50 per cent of the cases of epidermoid carcinoma, whereas in the adenocarcinoma group there was only 9 per cent, and in the anaplastic carcinoma group 18 per cent.

SYMPTOMATIC RELIEF

Carcinoma of the lung is an insidious disease, and when the diagnosis is made the disease is usually advanced. Since the general health of the patients is poor, they are often unable to withstand a course of vigorous radiotherapy. Some degree of palliation for a period of from one to thirteen months was obtained by 17 of the 38 patients who received their entire treatment at Montefiore Hospital. The symptoms most frequently relieved were cough, expectoration, hemoptysis and pain in the chest.

SUMMARY

1. An analysis of the findings on 192 patients with primary carcinoma of the lung who were examined post mortem at Montefiore Hospital was made to determine the effect of radiation therapy.

2. The tumors were classified histologically as epidermoid, adenocarcinoma and anaplastic carcinoma.

TABLE 8.—*Skeletal Metastases* *

Bone	Epidermoid Carcinoma		Adenocarcinoma		Anaplastic Carcinoma	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Ribs	21	20	9	18	8	22
Spine	13	12	12	24	12	32
Pelvis	10	9	4	8	..	..
Skull	3	3	4	8	3	8
Scapula	7	7	..	..	..	..
Clavicle	2	2	2	4	1	3
Femur	4	4	1	2	..	..
Tibia	2	2	..	..	..	..
Fibula	1	1	..	..	..	..
Humerus	1	1	..	..	..	..
Mandible	..	..	..	..	1	3
Sternum	1	1	..	..	..	..

* Thirty-four per cent of all patients had skeletal metastasis. Only 3 per cent had metastasis of the osteoplastic type.

Fig. 6.—Anaplastic carcinoma, round cell.

3. In one third of the cases of epidermoid carcinoma there were no distant metastases, while in those of adenocarcinoma and anaplastic carcinoma there were distant metastases in 92 per cent of the cases.

4. The survival period of irradiated patients was on an average five months longer than that of patients not so treated.

5. Twice as many irradiated as nonirradiated patients survived more than one year.

6. The greater the tumor dose delivered within specified limits, the longer was the survival period.

7. Symptomatic relief was obtained by 45 per cent of the patients treated at Montefiore Hospital.

1120 Park Avenue.

EXPERIMENTAL EVIDENCE FOR HISTAMINE RELEASE IN ALLERGY

GERHARD KATZ, M.D.
AND
STANLEY COHEN, M.D.
NEW ORLEANS

It has long been assumed that histamine plays a role in allergic reactions and that it may in part be responsible for many of the clinical symptoms in allergy. The actual experimental evidence for this hypothesis, however, is meager and circumstantial. It is, on the whole, based on the similarity between the allergic and the histamine cutaneous reactions and on some similarities between allergic attacks and the systemic effects of histamine injections. To our knowledge, the presence of a histamine-like substance after application of allergen to tissues from sensitized patients has not been demonstrated convincingly.

An experimental approach to the study of histamine [1] release in allergy suggested itself from observations on anaphylaxis which one of us has made recently.[2] It was found that blood cells from sensitized animals released part of their histamine into the plasma when brought into contact in vitro with the antigen. Extensive experimentation has made it probable that the amount of histamine released from tissues goes, to a certain extent, parallel to the intensity of the functional disturbances of the animal in anaphylactic shock.[3] It had seemed therefore justifiable to consider as a working hypothesis that the in vitro histamine release by blood cells from sensitized animals is an indicator of the degree of the animal's sensitization. This assumption was substantiated in experiments in which the degree of blood histamine release was correlated with the capacity of the animals to undergo shock. Since this method of producing in vitro shock of blood cells and determining the resulting histamine release is qualitatively and quantitatively accurate and dependable and allows one to experiment on one individual over unlimited periods of time without endangering life or disturbing the state of sensitization, an attempt was made to apply it to allergic patients.

From the Department of Pharmacology (Gerhard Katz), and the Hutchinson Memorial Clinic (Stanley Cohen), Tulane University of Louisiana School of Medicine.

Aided by a grant from the John and Mary R. Markle Foundation (to G. K.). The authors were given invaluable technical assistance by Miss Marguerite Magee.

1. In this report the term "histamine" is used in preference to "histamine-like substance." It is a substance which has been extracted by the method of Barsoum and Gaddum (Code, C. F.: The Quantitative Estimation of Histamine in the Blood, J. Physiol. **89:** 257 [April] 1937) and assayed biologically on the isolated atropinized guinea pig's ileum.

2. Katz, Gerhard: Histamine Release from Blood Cells in Anaphylaxis in Vitro, Science **91:** 221 (March 1) 1940; The Role of Blood Cells in the Anaphylactic Histamine Release,[4] Dragstedt, C. A.: The Relationship of Histamine to Anaphylaxis in the Rabbit, Science **91:** 617 (June 28) 1940.

3. Code, C. F.: The Histamine Content of the Blood of Guinea Pigs and Dogs During Anaphylactic Shock, Am. J. Physiol. **127:** 78 (Aug.) 1939. Ojers, G.; Holmes, C. A., and Dragstedt, C. A.: The Liver Histamine in Canine Anaphylaxis, J. Pharmacol. & Exper. Therap. **72:** 30 (May) 1941. Katz.[4]

EXPERIMENTAL OBSERVATIONS

When venous blood from a nonallergic individual was incubated with extract of allergen (giant ragweed, timothy or house dust) at 37 C. for fifteen minutes, no change in plasma histamine was observed. When, however, blood from a patient sensitive to the allergen was subjected to the same procedure, the plasma histamine level rose considerably. From 75 experiments on blood from 18 patients, the accompanying table shows some representative results. This reaction is apparently specific. Blood from a patient, for instance, who is clinically sensitive only to ragweed and not to timothy showed an increase in plasma histamine only on incubation with ragweed and not with timothy extract. The amounts of allergen used in these experiments were supramaximal; that is, they were kept higher than was necessary to effect the greatest possible plasma histamine rise. The source of the increased plasma histamine in this in vitro shock is the cells and not the plasma. Incubation of the sensitized plasma with the allergen left the histamine level unchanged.

Plasma Histamine Values After Incubation of Heparinized Blood with Locke's Solution ("Control") and Giant Ragweed Extract ("Shock") for Fifteen Minutes at 37 C.

No.	Condition of Patient	Date	Plasma Histamine in Micrograms of Base per Cubic Centimeter After Incubation of Blood with		Increase
			Locke's Solution	Ragweed Extract	
1	"Normal"; no evidence for allergy	1/29/41	0.013	0.015	15%
2	Ragweed and house dust allergy	3/24/41	0.020	0.032	60%
3	Ragweed and house dust allergy	10/28/40	0.019	0.051	168%
		3/ 7/41	0.004	0.030	650%
4	Ragweed allergy.....	10/ 9/40	0.050	0.14	180%
		10/22/40	0.013	0.040	280%
		4/28/41	0.005	0.050	900%
5	Ragweed allergy.....	2/ 9/41	0.003	0.030	900%
		2/14/41	0.014	0.040	186%
		3/ 3/41	0.017	0.030	76%

The ragweed extracts were free from detectable histamine. The volume of the solutions added to blood was 10 per cent of the samples. Usual over-all error of histamine estimation was ± 15 per cent.

According to our findings thus far, the histamine release from blood cells in the allergic in vitro shock varies greatly when a patient's blood is examined at different times. It seems to go parallel to the capability of the patient to have clinically manifest allergy. It does not regularly go parallel with the degree of response to the intradermal test.

COMMENT

This report is not concerned with studies of the role of histamine in different clinical allergic pictures. It is only intended to prove that, as far as blood cells are concerned, the cellular allergic reaction is histaminergic. The amounts of histamine released from blood cells on contact with the allergen could be large enough to be biologically significant in vivo. We may assume that at least at points of high concentrations of allergens, such as tissues of the respiratory or digestive tracts, the histamine released from blood cells

circulating through these areas should, to a certain extent, contribute to some of the local tissue reactions. The possibility of remote action should also be kept in mind. It is conceivable that histamine is released systemically from circulating blood cells after they have come into contact with allergen at the allergic ports of entry. It should be pointed out that histamine is not necessarily the only active humoral principle which is released or formed in antigen-antibody reaction. In the anaphylactic in vitro shock of blood, for instance, one of us found at least one active substance appearing in the plasma, with chemical and biologic properties different from histamine.[4]

If one can accept the hypothesis that the in vitro histamine release from blood goes to a significant degree parallel to the extent to which the patient's tissues show allergic reactions in spontaneous or induced attacks, then one is offered the possibility of investigating, by this method, allergic states comparatively accurately in controlled experiments. As pointed out, our observations so far support this hypothesis.

Clinical Notes, Suggestions and New Instruments

THE RELATIVE EFFECTS OF SEVERAL SUBSTANCES IN MINIMIZING IRRITATION CAUSED BY ADHESIVE PLASTER

ROBERT F. LEGGE, M.D., OAKLAND, CALIF.

Feeling that the degree and amount of irritation produced by adhesive plaster might be minimized by attempting to protect the skin before its application with certain substances, I carried out the series of observations presented in this paper. Previously the investigation of this phenomenon had been directed chiefly toward an effort to determine the factors involved in its production. This was done, undoubtedly, with the object of removing from the plaster the irritants which caused the irriitation. Apparently it is impossible to remove these irritants without reducing the effectiveness of the plaster so far as its adhesive properties are concerned.

Schwartz and Peck[1] in 1935 concluded as a result of their studies that the chief irritants were resins and smoke-cured wild rubber and that irritation was due partially to hypersensitivity to one of these ingredients. However, they also felt that some irritation resulted from maceration of the skin from application and removal of adherent material.

Grolnick[2] in 1936 concluded that specific sensitivity was present in only a small number of persons. In fact, only 2 such persons out of 275 tested were found. However, some irritation was noted in 1 out of 6 subjects. Further study by Grolnick in 1940[3] seemed to prove in 48 subjects by means of the patch test that specific dermatitis was even less common and that a certain amount of nonspecific irritation could not be avoided.

Forty-six different persons were used for this study. The strappings were always of the lower part of the back, and the area strapped was approximately 7 inches by 15 inches. In each instance the area to be strapped was divided into four squares. One of these was not painted, for a control. The others were painted with compound tincture of benzoin, merthiolate and metaphen. The latter two substances were each in a 50 per cent alcohol, 10 per cent acetone solution, and they will subsequently be referred to as solutions A and B. In each instance the strappings remained in place for one week, at which time the observations were made. The sites of the squares were varied, so that the square treated with benzoin, for instance, was at one observation in the middle of the field to be strapped and at another on the edge. The reactions of the skin were classified as normal, that is, without any evidence of reaction; erythematous irritation; pustular irritation; bleeding, and vesicles.

Seven of the 46 subjects, or 15.2 per cent, showed no reaction in any of the squares; 36, or 78.3 per cent, showed reaction in one or more of the squares, and 3, or 6.5 per cent, showed reaction in all four squares. The latter subjects may have represented instances of specific hypersensitivity. Since there were four squares on each person, 184 observations were represented. Of these, 106, or 57.6 per cent, were negative, while 78, or 42.4 per cent, showed some irritation. Of the squares showing no reaction 50, or 47.2 per cent, were on edges and 56, or 52.8 per cent, were in the middle, indicating perhaps that the edges were slightly more subject to tension trauma.

Table 1 shows the number of reactions in the squares treated with the three solutions and in those left untreated. From this it will be seen that the greatest number occurred in the untreated squares and that the least number occurred in those treated with solution A.

Table 2 shows the number and percentage of the different types of reactions observed.

Table 3 analyzes the method of treatment of the areas in the causation of each type of reaction. It will be seen that solution A produced the smallest number of irritation reactions. The greatest number of pustular irritations was seen in the squares treated with solution B.

SUMMARY AND CONCLUSIONS

It is felt that this series of observations shows definitely (1) that a certain amount of cutaneous irritation will be present under adhesive strapping; (2) that painting the skin before the adhesive is applied with any one of the three solutions used in this study will lessen the number of reactions; (3) that skin treated with solution A will show fewer reactions than skin treated with either of the other two solutions, and (4) that in the largest group of reactions—that of erythematous irritation—skin treated with solution A will show the lowest percentage of reactions.

2939 Summit Street.

TABLE 1.—*Distribution of Squares Showing Reactions*

Treated with	Number	Per Cent
Solution B	19	24.4
Untreated	23	29.5
Solution A	16	20.5
Tincture of benzoin	20	25.6

TABLE 2.—*Types of Reactions*

	Number	Per Cent
Erythematous irritation	56	71.8
Pustular irritation	8	10.3
Bleeding	9	11.5
Vesicles	5	6.4

TABLE 3.—*Distribution of Types of Reactions*

	Erythematous		Pustular		Bleeding		Vesicles	
Treated with	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
Solution B	13	16.7	4	5.1	2	2.6	0	0
Untreated	15	19.2	3	3.8	3	3.8	2	2.6
Solution A	11	14.1	1	1.3	2	2.6	2	2.6
Tincture of benzoin	17	21.8	0	0	2	2.6	1	1.3

4. Katz, Gerhard: The Role of Blood Cells in the Anaphylactic Histamine Release, J. Pharmacol. & Exper. Therap. **72**: 22 (May) 1941.

1. Schwartz, Louis, and Peck, S. M.: Pub. Health Rep. **50**: 811-819 (June 14) 1935.

2. Grolnick, Max: J. Allergy **7**: 556-570 (Sept.) 1936.

3. Grolnick, Max: Am. J. Surg. **50**: 63-78 (Oct.) 1940.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPP, M.D., Secretary.

PHENYLMERCURIC COMPOUNDS

Phenylmercuric chloride and basic phenylmercuric nitrate were the first of the organic mercurial compounds of their type found to possess effective bacteriostatic and bactericidal activity against certain pathogenic micro-organisms. Evidence to indicate that other phenylmercuric salts are similarly effective suggests that the activity of such compounds is primarily attributable to the phenylmercuric ion. In general, phenylmercuric salts are highly dissociable in solutions to provide phenylmercuric ions, effective concentrations of which are dependent on the widely varying solubility of the salts employed. In acid, neutral or slightly alkaline solutions, chlorides, bromides, iodides and soaps react with phenylmercuric ion to precipitate a phenylmercuric salt. Phenylmercuric chloride is soluble only to the extent of 1 part in 20,000 of water, the bromide is still less soluble and the iodide is quite insoluble. For this reason the chloride has been supplanted by the more soluble basic phenylmercuric nitrate and other salts.

The phenylmercuric radical ($C_6H_5Hg^+$) is more stable in acid than in alkaline solutions of its salts. Aqueous solutions containing phenylmercuric ions, buffered with inorganic or organic acids, are fairly stable. In the presence of organic solvents the stability is lowered but is still relatively good. Because of the fact that buffered solutions of phenylmercuric salts are more stable and also less irritating to tissue than unbuffered solutions, the former are preferable for pharmaceutic purposes. In general, the buffered solutions are stainless, colorless, odorless, without action on rubber, do not react with the body proteins and are noncorrosive to the common metals other than aluminum, except as these properties may be influenced by the particular acid employed. Solutions of phenylmercuric salts may develop increasing amounts of mercuric and mercurous ions or free mercury, as the result of gradual decomposition of phenylmercuric ions.

There is evidence to indicate that phenylmercuric compounds are of comparatively high germicidal and inhibitory value against a variety of pathogenic bacteria and of relatively low toxicity to human tissue. As with the other types of organic mercurial antiseptics, however, they cannot be depended on to kill bacterial spores even after several hours' exposure. The presence of buffered solutions of phenylmercuric salts does not interfere with the precipitin reaction of human serum, the action of complement, the digestive action of pepsin and trypsin or the antigenic power of vaccine; serum proteins are not precipitated and blood is not hemolyzed. Despite their relatively low toxicity, phenylmercuric compounds may produce irritation, "burns" or poisoning in occasional individuals with undue sensitivity. The minimum lethal intravenous dose for rabbits of a 0.067 per cent (1:1,500) aqueous solution of basic phenylmercuric nitrate (buffered with 0.1 per cent boric acid) is 7 cc. per kilogram of body weight. Other evidence indicates that the minimum lethal oral dose for these animals is approximately three times the intravenous dose. The toxicity of solutions of this and other phenylmercuric salts may be expected to vary according to the concentration of phenylmercuric ions, the presence of organic solvents, the acid which is added as a buffer to render them stable and the degree of decomposition. The appearance of metallic mercury as a precipitate in solutions of phenylmercuric salts indicates extensive decomposition.

MERPHENYL NITRATE (BASIC).—Basic Phenylmercuric Nitrate.—A molecular compound of phenylmercuric nitrate and phenylmercuric hydroxide. $C_6H_5HgNO_3.C_6H_5HgOH$ (F. W.-634.4).

Actions and Uses.—Merphenyl nitrate (basic) is recognized for external use in solution or ointment as an antiseptic for the prophylactic and therapeutic disinfection of the skin, superficial abrasions, lacerations, wounds and infections.

Dosage.—For prophylactic disinfection of the intact skin and minor lesions the 1:1,500 aqueous buffered solutions may be applied full strength; for application to mucous membranes or for the application of wet dressings or continuous irrigation to wounds, a 1:15,000 to 1:24,000 aqueous solution should be used (prepared by diluting the 1:1,500 buffered solution approximately ten to fifteen times with water). When used as a wet dressing, the 1:24,000 dilution should be prevented from becoming too concentrated, as the result of unavoidable evaporation, by the addition of about 0.5 per cent of sodium chloride. Approximately ½ teaspoon of noniodized table salt to each pint of diluted solution is recommended. This amount of sodium chloride does not produce excessive precipitation. The full strength (1:1,500) solution should never be used to wet bandages or dressings. The 1:1,500 oxycholesterin base ointment may also be employed for the prophylactic disinfection of minor injuries or may be applied twice daily for the treatment of superficial infections.

Manufactured by the Hamilton Laboratories, Inc., Hamilton, Ohio. U. S. patent 2,014,676 (Sept. 17, 1935; expires 1952). U. S. trademark 318,039.

Merphenyl Nitrate (Basic) Solution, 1:1,500: An aqueous solution of basic phenylmercuric nitrate 0.067 per cent (1:1,500), with boric acid 0.1 per cent.

Merphenyl Nitrate (Basic) Ointment, 1:1,500: A water-in-oil emulsion (⅔ aqueous, ⅓ oil phase) of an oxycholesterin base containing basic phenylmercuric nitrate 0.067 per cent (1:1,500), with boric acid 0.1 per cent.

Basic phenylmercuric nitrate is an odorless, white, crystalline powder, which melts with decomposition between 175 and 185 C. (extremely pure specimens melt as high as 192 C.). It is soluble (1:200) in glycerin, slightly soluble (1:800) in alcohol and very slightly soluble (1:1,200) in water. Its apparent solubility in water is increased if nitric acid or alkalis are present. Aqueous solutions of basic phenylmercuric nitrate are incompatible with halides, which cause the precipitation of the nearly insoluble halide compounds; e. g., phenylmercuric chloride (C_6H_5HgCl). The p_H of a 0.1 per cent aqueous solution of basic phenylmercuric nitrate is approximately 3.7

Add 3 cc. of sulfuric acid to about 0.1 Gm. of basic phenylmercuric nitrate: the mixture becomes yellow and the odor of nitrobenzene is evolved. Add 1 cc. of diluted hydrochloric acid to 5 cc. of saturated aqueous solution of basic phenylmercuric nitrate: a white precipitate forms; filter, wash the precipitate with cold water, dry it on a porous plate: the melting point of the product is between 248 and 255 C. Solutions of basic phenylmercuric nitrate respond to the U. S. P. test for nitrate. Add 5 cc. of ammonium sulfide solution to 5 cc. of a saturated solution of basic phenylmercuric nitrate: there is no reaction in the cold; heat the mixture for ten minutes in a boiling water bath: a black precipitate forms.

Add 5 cc. of sodium hydroxide solution to 5 cc. of a saturated solution of basic phenylmercuric nitrate: no yellow precipitate forms *(absence of mercuric ions)*; the solution does not blacken *(absence of mercurous ions)*. Dissolve 0.1 Gm. of basic phenylmercuric nitrate in 150 cc. of water; the solution is colorless and clear.

Ignite (HOOD) 0.5 Gm. of basic phenylmercuric nitrate: the residue does not exceed 0.1 per cent.

Determine the mercury content of an accurately weighed portion of basic phenylmercuric nitrate by a suitable standard method: the mercury content is not less than 62.75 per cent nor more than 63.50 per cent.

Determine the nitrogen content of an accurately weighed portion of basic phenylmercuric nitrate by the micro Dumas method or by the method described in the fifth edition of Methods of Analysis of the Association of Official Agricultural Chemists, page 27, section 27: the nitrogen content is not less than 2.05 per cent nor more than 2.25 per cent.

Determine the phenylmercuric ion content of 0.2 Gm. of basic phenylmercuric nitrate dissolved in 90 cc. of water and acidified with 10 cc. of concentrated nitric acid. Titrate the solution with twentieth-normal ammonium thiocyanate, using 2 cc. of saturated ferric ammonium sulfate solution as the indicator. Compare the color produced against a blank control containing 0.1 cc. of the ammonium thiocyanate solution. Each cubic centimeter of twentieth-normal ammonium thiocyanate is equivalent to 0.01389 Gm. of phenylmercuric ion: the phenylmercuric ion content found is not less than 87.0 nor more than 87.9 per cent.

MERPHENYL PICRATE TINCTURE 1:200 WITH PICRIC ACID.—Tincture of Phenylmercuric Picrate 1:200 with Picric Acid 1.2%.—A tincture consisting of acetone 10 per cent, alcohol 50 per cent and water 38.3 per cent, containing phenylmercuric picrate 0.5 per cent with picric acid (trinitrophenol) 1.2 per cent. Phenylmercuric picrate can be considered to have the formula $C_6H_5HgOC_6H_2(NO_2)_3$, although a product of this composition may be difficult to isolate. Solutions which can be considered to contain phenylmercuric picrate may be prepared by the addition of picric acid (trinitrophenol) in appropriate amounts to solutions of phenylmercuric hydroxide.

Actions and Uses.—Merphenyl picrate, in an acetone-alcohol tincture with picric acid, is primarily intended as a prophylactic disinfectant in the preoperative preparation of the intact skin and for recent abrasions, lacerations and wounds. It may also be employed in the treatment of superficial infections, particularly when the drying effect of acetone and alcohol is desired. Owing to its staining quality, the picrate compound is useful to delineate the field or area of application. Picric acid is added in sufficient concentration to provide fair stability, but the amount present is also sufficient to exert some disinfectant action in itself. Because of its high toxicity internally, the possibility of poisoning due to absorption of picric acid from applications of the tincture to large denuded areas of the skin or to mucous membranes should be kept in mind.

Dosage.—For prophylactic preoperative skin preparation, disinfection of soft tissue injuries and the treatment of superficial infections, tincture of phenylmercuric picrate 1:200 with picric acid 1.2 per cent is applied full strength; in wet dressings or continuous irrigation for infected wounds, a concentration of phenylmercuric picrate not greater than 1:15,000 should be used (prepared by diluting the 1:200 tincture approximately seventy-five times with water). When used as a wet dressing, undue concentration of the diluted solution from unavoidable evaporation should be prevented by the addition of about 0.5 per cent of sodium chloride. Approximately ½ teaspoon of noniodized table salt to each pint of diluted tincture is recommended. This amount of sodium chloride does not produce excessive precipitation. The full strength (1:200) tincture should never be used to wet dressings or bandages.

Manufactured by The Hamilton Laboratories, Inc., Hamilton, Ohio. U. S. patent 2,014,676 (Sept. 17, 1935; expires 1952). U. S. trade mark 318,039.

Merphenyl picrate tincture 1:200 with picric acid is a strongly yellow colored solution which possesses the odor of acetone and alcohol and a *p*H value of about 2.0. Its specific gravity is between 0.8980 and 0.901 at 25 C.

To 2 cc. of merphenyl picrate tincture 1:200 add 2 cc. of water and 2 drops of 1 per cent sodium chloride solution: a white precipitate, which is soluble in sodium hydroxide and may be reprecipitated by the addition of nitric acid, is formed. To 10 cc. of merphenyl picrate tincture 1:200 add 2 cc. of saturated sodium chloride solution: a precipitate forms; filter, wash the precipitate with cold water, dry on a porous plate: the melting point of the product is between 248 and 255 C.

To 5 cc. of merphenyl picrate tincture 1:200 add 5 cc. of water and 2 cc. of diluted nitric acid; extract the solution with three 10 cc. portions of ether; combine the ether extracts, filter through a cotton pledget and evaporate the ether: yellow crystals are obtained which melt at from 120 to 123 C.

To 2 cc. of merphenyl picrate tincture 1:200 add 2 cc. of water followed by 2 cc. of potassium iodide solution added a drop at a time: a white precipitate forms in the yellow solution that at no time shows traces of orange or red color and is insoluble in the excess of potassium iodide *(mercuric ions)*. To 2 cc. of merphenyl picrate tincture 1:200 add an excess of sodium hydroxide solution: the solution becomes orange-red, but there is no precipitate and the solution does not blacken *(mercurous salts)*. To 3 cc. of merphenyl picrate tincture 1:200 add 5 cc. of sulfuric acid, cool, overlay with a saturated solution of ferrous sulfate: a brown ring does not appear *(nitrate)*.

The mercury content of merphenyl picrate tincture 1:200 can be determined by a suitable electrolytic method: the mercury content is equivalent to not less than 0.26 per cent nor more than 0.28 per cent of merphenyl ion. The merphenyl ion content also may be determined, as directed under merphenyl borate tincture 1:500, after removal by ether extraction of the picric acid from an acidified portion of the tincture (nitric acid).

Caution: Merphenyl picrate tincture 1:200 with picric acid is more liable to decomposition on aging than certain other phenylmercuric salts.

MERPHENYL BORATE TINCTURE 1:500.—Tincture of Phenylmercuric Borate 1:500.—A tincture consisting of acetone 4.6 per cent, alcohol 43.2 per cent and water 50 per cent, containing phenylmercuric borate 0.2 per cent, with 1.0 per cent each of boric acid and sodium acid phosphate. Phenylmercuric borate can be considered to have the formula $C_6H_5HgBO_2.H_2O$, although a product of this composition may be difficult to isolate. Solutions which can be considered to contain phenylmercuric borate may be prepared by the addition of boric acid in appropriate amounts to solutions of phenylmercuric hydroxide.

Actions and Uses.—Merphenyl borate is recognized for use in tincture form for external use as an antiseptic for the prophylactic and therapeutic disinfection of the skin, superficial injuries and wounds. Buffered solutions of this compound are claimed to be somewhat less irritating than certain other phenylmercuric compounds.

Dosage.—For prophylactic preoperative preparation of the intact skin, disinfection of recent soft tissue injuries and the treatment of superficial wounds a 1:500 tincture of phenylmercuric borate may be applied full strength; for application to mucous membranes, in wet dressings or continuous irrigation for infected wounds a 1:24,000 concentration should be used (prepared by diluting the 1:500 tincture approximately forty-five times with water). In wet dressings, undue concentration of the diluted solution from unavoidable evaporation should be prevented by the addition of about 0.5 per cent of sodium chloride. Approximately ½ teaspoon of noniodized table salt to each pint of the diluted tincture is recommended. This amount of sodium chloride does not produce excessive precipitation. Dressings and bandages wet with the full strength (1:500) tincture should never be applied.

Manufactured by The Hamilton Laboratories, Inc., Hamilton, Ohio. U. S. patent 2,014,676 (Sept. 17, 1935; expires 1952). U. S. trademark 318,039.

Merphenyl borate tincture 1:500 is a colorless solution which possesses the odor of acetone and alcohol and a *p*H value of about 5.7. Its specific gravity is between 0.920 and 0.940 at 25 C.

To 2 cc. of merphenyl borate tincture 1:500 add 2 cc. of water and 2 drops of 1 per cent sodium chloride solution: a white precipitate which is soluble in sodium hydroxide and may be reprecipitated by the addition of nitric acid is formed. To 10 cc. of merphenyl borate tincture 1:500 add 2 cc. of saturated sodium chloride solution: a precipitate forms; filter, wash the precipitate with cold water, dry on a porous plate: the melting point is between 248 and 255 C. Evaporate 5 cc. of merphenyl borate tincture 1:500 on a water bath, cool, add 2 cc. of methyl alcohol, ignite the alcohol: the flame is green. To 2 cc. of merphenyl borate tincture 1:500 add 2 cc. of water and 1 cc. of silver nitrate solution: a yellow precipitate forms, soluble in nitric acid.

To 2 cc. of merphenyl borate tincture 1:500 add 2 cc. of water followed by 2 cc. of potassium iodide solution added a drop at a time: a white precipitate forms in the solution that at no time shows traces of orange or red and is insoluble in the excess of potassium iodide *(mercuric ions)*. To 2 cc. of merphenyl borate tincture 1:500 add 2 cc. of water and 2 cc. of sodium hydroxide solution: The solution remains clear and does not blacken *(mercurous ions)*. To 3 cc. of merphenyl borate tincture 1:500 add 5 cc. of sulfuric acid, cool, overlay with fresh saturated solution of ferrous sulfate: a brown ring does not appear *(nitrate)*.

Transfer 25 cc. of merphenyl borate tincture 1:500, accurately measured, to a suitable flask; add 25 cc. of water, 10 cc. of ferric ammonium sulfate solution and 5 cc. of nitric acid; titrate, using fiftieth-normal ammonium thiocyanate delivered from a 10 cc. buret until the color of the solution matches that of a control containing 50 cc. of water, 10 cc. of ferric ammonium sulfate solution, 5 cc. of nitric acid and 0.10 cc. of fiftieth-normal ammonium thiocyanate. Subtract 0.10 cc. from the volume noted in the titration; the volume difference is equivalent to not less than 37.5 mg. nor more than 42.5 mg. of phenylmercuric ion ($C_6H_5Hg^+$). (Each cubic centimeter of fiftieth-normal ammonium thiocyanate is equivalent to 5.554 mg. of phenylmercuric ion).

SECONAL SODIUM.—Sodium allyl (methyl propyl carbonyl) barbiturate.—Sodium allyl (1-methyl butyl) barbiturate. CO.N(Na).CO.NH.CO.C(.CH_2.CH : CH_2) [.CH(CH_3). CH_2. CH_2.CH_3].

Actions and Uses.—The actions and uses of seconal sodium are essentially those of barbital but it is described as a short-acting barbiturate. It is more active than barbital and is used in correspondingly smaller doses.

Dosage.—The average adult dose is from 0.1 to 0.2 Gm. (1½ to 3 grains). When oral administration is contraindicated, seconal sodium may be administered rectally. Smaller doses of seconal sodium are sedative, larger doses are hypnotic. For use in obstetrics and as a preanesthetic sedative the following dosage has been suggested: In obstetrics, an initial dose of 3 or 4½ grains (0.3 Gm.) followed by 1½ to 3 grain doses at appropriate intervals up to a total of no more than 12 grains within a twelve hour period; as a preanesthetic agent, 3 to 4½ grains one-half to one hour before the patient is sent to the operating room.

Manufactured by Eli Lilly & Co., Indianapolis. U. S. patent 1,954,429 (April 10, 1934 expires 1951). U. S. trademark 328,662.

Pulvules Seconal Sodium ¾ grain (0.05 Gm.).
Pulvules Seconal Sodium 1½ grains (0.1 Gm.).
Suppositories Seconal Sodium 2 grains (0.13 Gm.).

DEXTROSE (See New and Nonofficial Remedies, 1941, p. 179).

Baxter Laboratories, Inc., Glenview, Ill., and Don Baxter, Inc., Glendale, Calif. (American Hospital Supply Corporation, Chicago, eastern distributor).

Sterile 20% Dextrose W/V in Physiological Solution of Sodium Chloride in Vacoliter Container: Each hundred cubic centimeters contains dextrose U. S. P. 20.00 Gm. and sodium chloride, 0.85 Gm.

Sterile 25% Dextrose W/V in Physiological Solution of Sodium Chloride in Vacoliter Container: Each hundred cubic centimeters contains dextrose U. S. P. 25.00 Gm. and sodium chloride 0.85 Gm.

The several accepted dextrose solutions in physiological solution of sodium chloride, marketed in Vacoliter Containers, are also supplied in Half-Size Vacoliter and Double-Size Containers.

SCHIEFFELIN'S COD LIVER OIL CONCENTRATE TABLETS.—A cod liver oil concentrate in the form of tablets. Each tablet has a vitamin A potency of not less than 3,120 units and a vitamin D potency of not less than 312 units when assayed by the method of the U. S. P.

Actions and Uses.—Schieffelin's cod liver oil concentrate tablets possess properties similar to those of cod liver oil so far as these depend on the fat-soluble vitamin content of the latter.

Dosage.—For adults, two tablets three times daily; for children, one tablet three times daily, after each meal; for infants, one tablet daily, crushed and dissolved in the feeding.

Manufactured by White Laboratories, Inc., Newark, N. J. (Schieffelin & Co., New York, distributor). The concentrate used is made under U. S. patent 1,984,858 (Dec. 18, 1934; expires 1951).

THEOPHYLLINE WITH ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1941, p. 583).

The following dosage form has been accepted:

Tablets of Aminophylline, 0.2 Gm. (3 grains).
Prepared by The Lakeside Laboratories, Inc., Milwaukee.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 22, 1941

THE REQUIREMENT FOR CALCIUM

Calcium has manifold functions in the human body, not only as a structural factor in the bones and teeth, but also as a prerequisite to normal neuromuscular action and the clotting of blood. Its unique osmotic importance in the blood has been suggested; it exerts a significant influence on the movement and distribution of other mineral elements in the body. This recognized physiologic prominence of calcium has attracted the attention of investigators for many years. It is not surprising that the distribution and availability, the utilization by the organism and the human requirement are still themes of active interest in metabolism and nutrition.

Although milk with its 0.12 per cent of calcium is considered the best source of calcium, vegetables also contribute this element to the diet. When experimental animals are forced to obtain a considerable proportion of their daily calcium from vegetable sources, the availability of this element is definitely less than when milk is the main source of lime. In a recent report Shields and his co-workers [1] showed that, if the availability of calcium in milk is expressed as 100, carrots, fresh lettuce and string beans have the respective values 85, 80 and 74 in this connection. They conclude that there is something in vegetables which decreases the utilization of the contained calcium over that in liquid or dried milk.

Equally important with the availability of calcium from different foods is the efficiency with which the body can utilize the calcium in an excellent source such as milk. An extensive series of studies [2] from the University of Illinois has recently provided data bearing on this question in preschool children and also in adult human subjects. In all these experiments the conception of degree of utilization was the relationship between the net calcium loss to the body on a calcium poor basal ration and the supplementary dietary calcium required to eliminate that net loss. When this method of computation was applied to dried or fluid milk it was found that only about 20 per cent of the calcium in this relatively high calcium food was utilized under the conditions of the study by the children and the adults.

The data on which the foregoing conclusions are based permit the calculation of the calcium requirement of man. Two recent reports [3] based on studies of a total of sixteen adults in which milk provided a large part of the calcium show essential agreement in daily calcium requirement, the value being 9.6 mg. per kilogram of body weight from one study and 10.7 mg. from the other. These values are greater than the value which is currently looked on as adequate and which is the basis for estimating the nutritive value of dietary programs with respect to calcium. The considerable reserves of the body suggest that temporary shortage of dietary calcium is not of immediate concern. The newer studies, however, will be of value in long range planning of dietaries and in securing greater insight into the problems of mineral metabolism.

1. Shields, J. B.; Fairbanks, B. W.; Berryman, G. H., and Mitchell, H. H.: J. Nutrition **20**: 263 (Sept.) 1940.

2. Steggerda, F. R., and Mitchell, H. H.: J. Nutrition **17**: 253 (March) 1939; **21**: 577 (June) 1941. Kinsman, Gladys; Sheldon, Dorothy; Jensen, Elizabeth; Bernds, Marie; Outhouse, Julia, and Mitchell, H. H., ibid. **17**: 429 (May) 1939. Breiter, Herta; Mills, Rosalind; Dwight, Julia; McKey, Beula; Armstrong, Williamina, and Outhouse, Julia, ibid. **21**: 351 (April) 1941.

3. Steggerda, F. R., and Mitchell, H. H.: J. Nutrition **21**: 577 (June) 1941. Outhouse, Julia; Breiter, Herta; Rutherford, Esther; Dwight, Julia; Mills, Rosalind, and Armstrong, Williamina, ibid. **21**: 565 (June) 1941.

SPARING THE LIVER

Addis and his co-workers [1] found that livers of albino rats lose, after a two day fast, 20 per cent of their original protein content, while the kidney, the heart and all other organs and tissues combined lose 4 per cent. The liver presumably is a depot for stored proteins, which may be used during fasting as glycogen is used during fasting. Goldschmidt, Vars and Ravdin [2] demonstrated in rats that the incidence and the severity of damage to the hepatic cells twenty-four hours after one hour of chloroform anesthesia increases progressively with an increase in the concentration of lipids in the liver. A high protein diet previous to the anesthesia with chloroform reduced the incidence of hepatic cellular necrosis even in livers with a high lipid content and therefore in the face of a severe attack by chloroform. A high concentration of hepatic glycogen, per se, failed to confer protection against the hepatotoxic action of chloroform with the same concentration of hepatic fatty acids and similar intake of proteins. Protection against hepatic injury following a diet high in carbohydrates is apparently due to the reduction of the lipid content of the liver. Miller and Whipple [3] demon-

1. Addis, Thomas; Poo, L. J., and Lew, W.: Protein Loss from Liver During a Two Day Fast, J. Biol. Chem. **115**: 117 (Aug.) 1936.

2. Goldschmidt, Samuel; Vars, Harry M., and Ravdin, Isidor S.: The Influence of the Foodstuffs on the Susceptibility of the Liver to Injury by Chloroform, and the Probable Mechanism of Their Action, J. Clin. Investigation **18**: 277 (May) 1939.

3. Miller, L. L., and Whipple, G. H.: Chloroform Liver Injury Increases as Protein Stores Decrease: Studies in Nitrogen Metabolism in These Dogs, Am. J. M. Sc. **199**: 204 (Feb.) 1940.

strated in dogs that liver injury due to chloroform anesthesia increases in extent as the protein body stores are depleted. Fifteen to twenty minutes of chloroform anesthesia in a protein depleted dog was frequently fatal with extensive liver necrosis and the typical picture of choloroform poisoning, whereas dogs without protein depletion tolerated ninety minutes of chloroform anesthesia with but little liver injury. Messinger and Hawkins [4] found protein most effective in protecting dogs against injury to the liver from arsphenamine. A carbohydrate diet was beneficial, though to a lesser degree. Fat in the diet has proved deleterious. When fat fed dogs that showed severe intoxication due to arsphenamine were switched to protein or carbohydrate diets they immediately recovered from the intoxicated state, and the icteric index decreased. Johnson, Ravdin, Vars and Zintel [5] found in dogs that a diet high in protein and carbohydrates and without fat was most effective in reducing the fatty acid concentration of the liver and in increasing the hepatic glycogen in the presence of obstruction of the common duct. The diet gave the same result as the usual high carbohydrate diet in about half the time. These experiments appear sufficiently conclusive to warrant the adoption of a high protein, high carbohydrate, no fat diet in the preoperative preparation of the patient seriously ill with disease of the biliary tract.

Starling emphasized many years ago that the osmotic pressure of the plasma crystalloids is of minor importance in keeping fluids in the blood vessels, for the crystalloids pass freely in either direction through the walls of the blood vessels. As the plasma protein concentration falls from the normal 7.0 to 7.5 Gm. per hundred cubic centimeters, the osmotic pressure exerted by the plasma is reduced and fluid begins to leave the vessels, causing at first a latent and later an evident edema. The common occurrence of edema among the undernourished peoples in the late war is well known. The evidence is clear that the so-called nutritional edema is due to deficient protein intake and consequent hypoproteinemia. The fundamental cause of edema is hypoproteinemia, and the mechanism is that suggested by Epstein; namely, a reduction in the osmotic pressure of the serum protein.

Jones and Eaton [6] were first to present evidence that nutritional edema is not uncommonly associated with surgical procedures, particularly of the gastrointestinal tract. The prolonged interference with a normal diet occurring with operations for gastric and duodenal ulcer and gastric cancer results frequently in varying degrees of undernutrition. Hypoproteinemia intensifies edema of trauma naturally occurring at the site of gastrointestinal suture. Under normal conditions of fluid exchange the edema of trauma begins to disappear forty-eight to seventy-two hours after operation, but in the presence of hypoproteinemia it continues to increase during this period, resulting in a mechanical impediment to the forward progress of gastric contents. Ravdin stresses that attempts to restore a normal fluid and electrolyte balance in the presence of hypoproteinemia, without at the same time increasing the colloid osmotic pressure by adding to the plasma, too frequently results only in adding to the extravascular fluid reservoirs. A diet in which 75 to 80 per cent of the total calories come from carbohydrates and 20 to 25 per cent from protein will prove to be the most satisfactory diet. From 2,500 to 3,000 calories should be given for several days prior to operation and resumed as soon as possible after. The most rapid means of correcting protein deficiency is by repeated plasma transfusions. When more time is available, the orojejunal method described by Stengel and Ravdin [7] is useful.

4. Messinger, W. J., and Hawkins, W. B.: Arsphenamine Liver Injury Modified by Diet: Protein and Carbohydrate Protective, But Fat Injurious, Am. J. M. Sc. **199**: 216 (Feb.) 1940.

5. Johnson, Julian; Ravdin, I. S.; Vars, Harry M., and Zintel, Harold A.: Effect of Diet on Composition of the Liver in the Presence of Obstruction of the Common Bile Duct, Arch. Surg. **40**: 1104 (June) 1940.

6. Jones, C. M., and Eaton, F. B.: Postoperative Nutritional Edema, Arch. Surg. **27**: 159 (July) 1933.

INTERFERENCE WITH RADIO COMMUNICATIONS

Electromedical equipment may interfere with radio communication. Physicians do not, of course, desire to interfere with radio communications, but owing to the characteristics of the equipment a portion of the energy may escape the apparatus and appear in space as an unwanted radio signal, thus interfering with communications. Although great progress has been made in the construction of x-ray apparatus, the old type of x-ray equipment is still a source of interference. Efforts have been made to solve this problem in the field of diathermy. Cooperation now prevails among the several interested groups, including the Federal Communications Commission, the manufacturers of electromedical equipment, the radio communications interests and the Council on Physical Therapy, which represents the medical profession.

In countries now at war, drastic steps in the control of diathermy machines have had to be taken. The rule here quoted, placed in effect in 1939, applies in England:

> The Postmaster General in the exercise of the powers conferred on him by Regulation 55 of the Defense Regulations, 1939, hereby orders that on and after the 25th day of November, 1939, no person shall, except under the authority of a permit granted by the Postmaster General for the purpose, sell, purchase, let, hire, supply, dispose of, acquire or distribute any of the under-mentioned articles:
>
> (*e*) High frequency equipment (being equipment which generates or uses high frequency current at frequencies greater than 10,000 cycles per second and having a maximum output exceeding 10 watts), including such equipment intended for use in connection with furnaces and medical apparatus.

7. Stengel, Alfred, Jr., and Ravdin, I. S.: The Maintenance of Nutrition in Surgical Patients, with a Description of the Orojejunal Method of Feeding, Surgery **6**: 511 (Oct.) 1939.

In Canada the Radio Division of the Department of Transport has issued a pronouncement in the *Canada Gazette* entitled "Suppression of Inductive Interference from Spark Gap Electro-Medical Apparatus," the first paragraph of which reads:

> The necessity of protecting radio communications, including those used by the fighting services, as well as broadcast reception, has obliged the Department of Transport to bring in regulations prohibiting, after January 1st, 1942, the use of spark-gap type diathermy apparatus and mechanical rectifiers for x-ray installations, unless such equipment is adequately shielded, thereby confining the radiation within reasonable limits, or their interference otherwise suppressed.

As far as is known, such steps have not been contemplated here in the United States, even in the event of active war. A technical solution is well known and requires merely the application of certain simple technics employed in all of the various radio services; for example, screening of the equipment or restricting the high frequency electrical energy to definite frequencies. Undoubtedly an increase in cost of equipment will be entailed, which will be the cost of screening or the additional accessories in the apparatus to regulate the frequency.

The Federal Communications Commission is trying to solve this problem not only without having recourse to licensing, as in England, but without creating any condition likely to place a burden on a practicing physician or increase the cost of diathermy treatments to the public. Since the radio channels affected by diathermy operation are invaluable to the armed forces for other national defense uses, and for many important communications services needed to fulfil the requirements of the general public, the medical profession will of course assist in all ways possible to solve this problem.

Current Comment

AMERICAN MEDICAL ASSOCIATION BROADCASTS

Doctors at Work, the dramatized radio program broadcast by the American Medical Association and the National Broadcasting Company, will go on the air for its second season beginning December 6 from 5:30 to 6 p. m. eastern standard time (4:30 to 5 p. m. central standard time, 3:30 to 4 p. m. mountain standard time, 2:30 to 3:30 p. m. Pacific standard time). The program will be broadcast on upward of seventy-five stations affiliated with the Red Network of the National Broadcasting Company and will be heard from coast to coast. Doctors at Work, a successful serialized story broadcast last year, dealt with the experiences of a fictitious but typical American boy choosing medicine for his vocation and proceeding to acquire the necessary education and hospital training for the private practice of medicine. Interwoven with the personal story of young Dr. Tom Riggs and his fiancée, Alice Adams, was the romance of modern medicine and how it benefits the doctor's patients. The new series of broadcasts will resume where last year's story left off, namely with the marriage of Tom Riggs and Alice Adams, and depict the subsequent life of a young doctor and his wife in time of national emergency in a typical medium sized American city. The program will be produced under the supervision of the Bureau of Health Education of the American Medical Association. Scripts will be by William J. Murphy of the National Broadcasting Company, author of such successful radio productions as Flying Time, Cameos of New Orleans, Your Health, Medicine in the News and last year's Doctors at Work. The scripts will again be produced by J. Clinton Stanley, and the National Broadcasting Company orchestra will be under the direction of Joseph Gallicchio as heretofore. Actors will be drawn from the well known group of Chicago radio actors previously heard in American Medical Association and other successful broadcasts. The program will be available at all stations affiliated with the Red Network of the National Broadcasting Company. Announcements should be sought in local newspaper radio columns under the title Doctors at Work or possibly American Medical Association or, in some instances, Health Broadcasts. Evidence of local interest in the program may be the determining factor in whether a local station takes this educational sustaining feature or sells its time to a local revenue producing program.

ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

On November 14 and 15 the Annual Conference of Secretaries of Constituent State Medical Associations was held in the headquarters office of the American Medical Association. The keynotes of the current conference were military medical preparedness and extension of plans for the provision of medical service. The program included the following contributions:

The United States Army and Medical Preparedness. L. B. McAfee, Assistant Surgeon General of the United States Army.

The Federal Security Agency and Medical Preparedness. Watson Miller, Assistant Administrator of the Federal Security Agency.

Social Security Medical Problems in Illinois. Charles H. Phifer, President of the Illinois State Medical Society.

Principles Involved in Medical Service and Group Hospitalization Plans. Stanley B. Weld, Editor in Chief of the *Connecticut State Medical Journal;* Peter Irving, Secretary of the Medical Society of the State of New York.

Industrial Health: Progress and Prospects. C. M. Peterson, Secretary of the Council on Industrial Health of the American Medical Association.

How Can the State Medical Journals Best Serve Organized Medicine? Wingate M. Johnson, Editor of the *North Carolina Medical Journal.*

The Responsibilities of the Editorial Staff of a State Medical Journal. Robert N. Nye, Editor of the *New England Journal of Medicine.*

Address. Irvin Abell, Chairman of the Committee on Medical Preparedness of the American Medical Association and Chairman of the Health and Medical Committee of the Federal Security Agency.

The Role of the Medical Profession in the Selective Service System. Lewis B. Hershey, Director of the Selective Service System.

Medical Aspects of Civilian Defense. George Baehr, Chief Medical Officer of the Office of Civilian Defense.

So important were the addresses delivered on this occasion that it is proposed to publish some of them in full in future issues of THE JOURNAL and to publish as well a condensed report of such manuscripts and discussions as are not published in the complete report. The statement by Brigadier General Hershey on the present status and forthcoming plans of Selective Service, particularly with relation to the medical aspects of this work, was so important that his paper will be published in full in THE JOURNAL for November 29 under the heading of Medical Preparedness.

PROBLEMS CONFRONTING MEDICAL INVESTIGATORS

In a recent address at the fiftieth anniversary celebration of Stanford University, Dr. Walter B. Cannon [1] presented some questions which deserve careful study. The shift in age grouping of the population, with increasing percentages of the elderly and the aged, now widely recognized as a fact, has presented the medical profession with a series of new problems. As one grows older, Cannon points out, the fires of life burn less vigorously and the adjustments of bodily organs to emergencies tend to be impaired—the breath is shorter, the heart beats less effectively, blood pressure gradually rises as the years pass and becomes ill adapted to critical requirements. Are these features essential attributes of the elderly or are they the consequences of comfortable and habitual indolence? In middle age some of these effects may result from inactivity alone and can be reversed by training; is this true in the later decades? If so, should attempts be made to alter them? What, Cannon says, would be the effects if they were altered? These questions offer possibilities for useful research. Almost none of the most prominent disorders of senescence are thoroughly understood. The prevailing ignorance, it may be assumed, is largely due to lack of systematic study. The challenge presented by realization of this fact will doubtless receive many answers. Severe demands on the nervous system, which may have arisen in part from the remarkable shift in the occupation of the citizens, often result in calls for medical attention. A disorder of the brain may fail to be revealed at necropsy or under the microscope. And yet emotional upsets which leave in the nervous pathways no visible trace have concrete and obvious effects and may be the occasion for profound misery and suffering. The gradual onset of disabilities, bodily and mental, in the later years of life demands, Cannon believes, long range studies on the possible influence of inheritance, early injuries, severe infections in childhood and youth, frustrated plans, the demands of labor and probably many other conditioning experiences. Cannon also calls attention to the disastrous cooperation of disease, pain and early death when warring hosts or nations battle against nations for supremacy. International developments unquestionably have affected medical research in a warping of scientific activities away from untrammeled pursuits toward problems of military significance. Medical investigators, however, by learning the nature and cure of malnutrition, by devising appropriate treatment for shock and hemorrhage and in many other ways have served to mitigate the torments and ravages of warfare. One of the results of the present war already has been a more intimate association of a highly desirable nature with medical investigators in Latin American nations. Finally Cannon emphasizes as one of the biggest problems facing medical investigators the filling of their own ranks. This is indeed primary, and, unless well equipped recruits can be attracted to the career of the investigator, progress will end. Cannon dwells at some length on the attractions and rewards of medical investigators, pointing out particularly one consideration eminently creditable to their efforts: "Because life and health are precious and medical research is deeply concerned with protecting life and health, the triumphs of that research are put to use without regard to any national or racial difference. . . . Even though the beneficiaries may despise their benefactors, they must receive the benefactions. . . . The conquest of a disease, it should be remembered, is a permanent conquest."

1. Cannon, W. B.: Problems Confronting Medical Investigators, Science 94: 171-179 (Aug. 22) 1941.

NEW AND NONOFFICIAL REMEDIES DESIGNATED IN NEW HAMPSHIRE LAW

An act relating to the sale of drugs in New Hampshire was approved on June 13 and took effect on October 1. This law, which is intended to curb further the promiscuous or unlicensed sale of potent drugs, designates, as standard compendiums for use in determining the drugs affected, the United States Pharmacopeia, the National Formulary and New and Nonofficial Remedies. The latter volume lists and describes the articles that stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1 of the year of publication. The descriptions of accepted articles are based in part on investigations made by, or under, the direction of the Council and in part on evidence or information supplied by the manufacturer or his agents. Statements made by those commercially interested are examined critically and admitted only when they are supported by other evidence or when they conform to known facts. New and Nonofficial Remedies, which is only one of the books published under the authorization of the Council on Pharmacy and Chemistry, is intended chiefly for the physician, but it has proved of value to others who are concerned with medicinal preparations including manufacturers of pharmaceutic products, pharmacologists, governmental institutions, teachers and students. Designation of this volume in the New Hampshire Law is one more well deserved recognition of the Council's thirty-six years of continuous efforts to expose deceptions practiced on the medical profession and to evaluate proprietary drugs detailed to the profession. These efforts have contributed greatly to rational therapeutics.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

EQUIPMENT AND OPERATION OF EMERGENCY MEDICAL FIELD UNITS

MEDICAL DIVISION—BULLETIN NO. 2

Prepared by Office of Civilian Defense, Washington, D. C.
(See THE JOURNAL, Aug. 30, 1941, p. 793)

This bulletin supplements Medical Division Bulletin No. 1, which deals with the organization of Emergency Medical Service for Civilian Defense. The Office of Civilian Defense recommends that state and local defense councils adopt the plans set forth in these bulletins so as to secure the advantages of uniformity in organization, equipment and operation of Emergency Medical Field Units. In the event of a civilian disaster, adjacent communities which have adopted this common pattern can pool or exchange their resources. The adoption of uniform equipment standards during the national emergency is desirable also because of priorities in materials and manufacture. The recommended equipment conforms as far as possible, therefore, with that of the Medical Department of the U. S. Army.

The Field Casualty Service

As recommended in Bulletin No. 1 of the Medical Division, emergency medical field units should be established in all approved general hospitals, both voluntary and governmental, located in coastal states and in industrial centers of the interior. The plan of organization and size of the emergency field units for hospitals of various sizes and the total number of field units recommended on a population basis are outlined in Bulletin No. 1.

The emergency medical field units of a hospital are composed of two or more squads, so that at least one squad is on first call during each twelve hour period of the day. In larger hospitals reserve squads should be available at the call of the control center in the event that multiple sites of disaster should require the manning of additional casualty stations and first aid posts. All members of emergency medical field units should be systematically drilled in first aid procedures.

To be prepared to respond promptly and effectively, emergency medical units should also participate in field drills. These drills should be called by the local defense authority and should include police and fire auxiliaries, rescue squads, stretcher teams, transport and canteen services so that the local protection services may be integrated.

It is the considered opinion of the Medical Advisory Board of the Office of Civilian Defense that the medical field units should be related to hospitals. During the present period of preparation, prompt availability in the event of sudden and unexpected disaster can be expected only of units organized largely from the intern and resident staffs. It is advisable to designate an assistant surgical resident or surgical intern as squad leader. In order not to deplete the surgical staff of the hospital other members of emergency squads may be derived from the medical, pediatric and other nonsurgical divisions of the hospital.

Reserve Squads.—In the event of the more remote possibility of prolonged and continuous need for service in casualty stations and first aid posts, it would become necessary to replace most of the hospital personnel assigned to the field casualty service. Reserve squads made up of medical, nursing and trained volunteer personnel from the community would carry the major responsibilities for the field service. Until the need is demonstrated, it will be simpler and more efficient to concentrate the primary organization of emergency medical field units for the most part within approved hospitals.

In hospitals whose resident staff should not be depleted even for a temporary emergency, the primary medical field unit may be organized in part or even wholly from physicians and nurses engaged in private practice in the community.

Operation of Field Casualty Service.—The operation of the field casualty service may be sketched as follows: Air raid warnings will come to the local control center from the military establishment in the area and will be relayed to the proper civilian defense officers. Information concerning the location and extent of local damage will be transmitted promptly to the control center by air raid wardens and other observers. Using a spot map showing the location of hospitals and sites for casualty stations, the control center or its substation will call out an appropriate number of emergency medical field units.

The squads of the emergency medical units which have responded will proceed to the sites to which they have been directed by the control center or its substation and set up casualty stations. When indicated, the squad leader in charge of a casualty station may dispatch one or more teams of physician, nurse and nursing auxiliaries to establish first aid posts at sites closer to the disaster. The establishment of fixed first aid posts and casualty stations is not at present contemplated.

CASUALTY STATIONS

The casualty station will occupy a predetermined site such as the clinic of a hospital, health department or voluntary agency, a health center or substation, a school basement or other suitable place which provides shelter, protection and accessibility. It should be located if possible on a side street so that ambulances will not block main thoroughfares. The sites selected for casualty stations should be numbered and indicated on a spot map of the community. The casualty station will:

1. Serve as a center from which medical teams may be sent closer to the disaster if required.

2. Care for the less severely injured and for persons suffering from shock and hysteria until they may be permitted to return to their homes or to temporary shelters. This will protect hospitals from the burden of minor casualties which would interfere with the work of caring for the seriously injured.

3. Keep a record of all persons treated at the station and see that all casualties transferred to a hospital are tagged.

The casualty station is to be supplied with stretchers, collapsible cots and blankets from medical depots located at sites from which the transportation of emergency medical service is derived. Eight stretchers, twenty-four cots and sixty-four blankets should be available per 10,000 of population for issue to casualty stations as the need arises. Where kitchen tables are not available at the location of a casualty station, two pairs of saw horses, each 36 inches high, may be required, on which stretchers may be placed to serve as dressing tables. Stretcher teams and rescue squads will obtain their stretchers at casualty stations.

FIRST AID POSTS

The first aid post will occupy a temporary location usually close to the scene of disaster and will:

1. Care for the more severely injured, preparatory to their transfer to a hospital. No surgery other than emergency first aid is contemplated.

2. Classify the casualties so as to expedite the transfer of the seriously injured to a hospital—a most important responsibility which requires surgical judgment.

3. Direct the stream of ambulatory and of slightly injured stretcher patients and those suffering from shock or hysteria to a casualty station.

4. Tag all casualties immediately. Maintain entries in the casualty record book of all persons receiving first aid. (A nurse or nurse's aide is to be responsible for these records.)

LIST 1.—*Equipment for a First Aid Post*
(Working supply for one physician's team)

Item	No.
Cases, carrying, waterproof (15 by 20 by 8 inches)	2
Scissors, surgical, Mayo 5½ inch curved	1
Scissors, surgical, Mayo 5½ inch straight	1
Scissors, bandage, angular, 7½ inch	2
Forceps, hemostatic, Rochester, curved, 6½ inch	6
Forceps, hemostatic, Rochester, straight, 6½ inch	6
Forceps, tissue, spring, 5½ inch	1
Forceps, tissue, spring, mouse-tooth, 5½ inch	1
Forceps, tongue holding, 7 inch	1
Tube, breathing (airway) hard rubber or metal (adult)	1
Tube, breathing (airway) hard rubber or metal (child)	1
Retractor, tissue, double end nested 9 and 10 inch Army type, pair	1
Syringe, hypodermic, Luer, 2 cc.	2
Needles, hypodermic, 25 gage, ⅝ inch	12
Needles, hypodermic, 19 gage, 1¼ inch	6
Tubes, constriction (length 3 inches)	12
Stoppers for constriction tubes	12
Handles, Bard Parker, No. 3	2
Blades, Bard Parker, No. 10, package of 6	1
DRUGS	
Morphine sulfate syrettes, 0.015 Gm.	20
Morphine sulfate syrettes, 0.030 Gm.	10
Sulfathiazole, powder, vials, 5 Gm.	12
Ointment, ophthalmic, boric acid, 5% (tube, 4 Gm.)	1
Jelly, tannic acid, tube, 45 Gm.	2
Soap, hand, bar	2
Alcohol, denatured, ethyl, bottle, 500 cc.	1
Ammonia, aromatic spirit, bottle, 60 cc.	1
Sodium bicarbonate	½ lb.
Phenobarbital tablet, 0.03 Gm.	100
Caffeine sodium benzoate, ampules, 0.5 Gm.	12
Epinephrine hydrochloride, 1:1,000	20 cc.
DRESSINGS, BANDAGES AND SO ON	
Compress, gauze, 4 by 4 inches	100
Compress, gauze, 2 by 2 inches	200
Pad, surgical, 8 by 10 inches (Dakin)	25
Bandage, gauze, 2 inch	24
Bandage, muslin, 4 inch	24
Bandage, triangular, muslin, 50 by 36 by 36 inches	24
Cotton, absorbent, roll, sterile	2 oz.
Cotton batting, roll	1 lb.
Plaster, adhesive, 2 inch, 10 yards, roll	2
Pins, safety, large	48
Splints, basswood	12
Depressors, tongue, wood	24
Applicators, wood	25
Sheeting, rubber (45 by 72 inches)	1
Basins, white enamel, 9 by 6 by 1⅞ inches (one with cover)	2
Stove, gasoline (Coleman)	1
Pencil, indelible	1
Pencil, dermatographic (red)	1
Pads, heating, chemical	4
Pads, heating, refills, chemical	4
Gloves, surgeon's, rubber, size 8 (latex)	2
Flashlight (two cell)	1
Lantern, electric, dry cell type	1
Battery, dry cell, for lantern, No. 6	4
Battery, dry cell, for flashlight, No. 950	4
Cups, paper	25
Brush, nail	1
Towels, hand	12
Matches, safety	3
Tourniquet, field, web	3
Bag, laundry, small	1
Tags, identification, book of 20	6
Casualty Record Book	1
SUTURE MATERIAL	
Catgut, plain No. 1, tubes, boilable	6
Silk, dermal, medium, 40 inch strand, package	6
Needles, suture, catgut, size 1, ½ circle, trocar point, Mayo	6
Needles, cutting edge, straight	6

Equipment for Emergency Medical Field Units

The following lists include only the minimum medical and surgical equipment required for emergency treatment at the site of a disaster. Provision for other than essential minor surgery has purposely been omitted.

The equipment for each physician and his team is to be carried in two portable boxes provided with handles. These two boxes should be of the same size (15 by 20 by 8 inches) and may be packed conveniently in the ambulance or other vehicle transporting the emergency squad to the site of the casualty station. The provision in separate containers of working supplies for each physician will permit the squad of a casualty station to split off one or more teams of physicians and assistants who can be dispatched with their equipment to set up advanced first aid posts.

EQUIPMENT FOR A FIRST AID POST

List 1 indicates the medical and surgical equipment for each physician of an emergency medical field unit and his team of nurse and orderly or nurses' aide. One or more such teams man a first aid post. First aid posts are subsidiary to a casualty station which will furnish replacements of drugs and surgical supplies.

EQUIPMENT FOR A CASUALTY STATION

List 2 indicates the equipment for a casualty station. It contains bulky articles, such as traction splints, which could not be included in the equipment of the first aid post without impairing its mobility. These articles will be issued from the casualty station to the first aid posts as the need arises. Casualty stations are also stocked with dressings, bandages and drugs from which the supplies of the first aid posts may be replenished. Blood, plasma and biologic products such as tetanus antitoxin or toxoid may be obtained by casualty stations from the parent hospital as needed. They are, therefore, omitted from this list.

LIST 2.—*Equipment for a Casualty Station*
(Emergency squad of two or four physicians, nurses and nursing auxiliaries)

Item	No.
Trunk, Army type (20 by 16½ by 12 inches)	1
Pins, safety, large	100
Splint, basswood	30
Depressors, tongue, wood	100
Applicators, wood	50
Sheeting, rubber (45 by 72 inches)	2
Basins, white enamel, 9 by 6 by 1⅞ inches (2 with cover)	4
Gag, mouth	1
Stove, gasoline (Coleman)	2
Catheter, urethral, rubber, F. 14	4
Tags, identification (books of 20)	6
Pencil, indelible	4
Pencil, dermatographic (red)	4
Pads, heating, chemical	8
Refills, pads, heating, chemical	8
Gloves, surgeon's, rubber, size 8, (latex)	4
Cups, paper	50
Brush, nail	2
Matches, safety, package of 12 boxes	1
Towels, hand	24
Lantern, electric, dry cell	2
Batteries, dry cell, lantern, No. 6	12
Tourniquet, field web	6
Bag, laundry, small	2
Splint, arm, hinge, Thomas	4
Splint, leg, half-ring, Army type	4
Splint, Thomas, leg, child	2
Splint, arm, Murray Jones, child	2
Catgut, plain No 1, tubes, boilable	12
Silk, dermal, medium 40 inch strand, package of 12	1
Needles, suture, size No. 1, ½ circle, trocar point, Mayo	12
Needles, cutting edge, straight	12
Razor, safety	1
Blades, safety razor	12
DRUGS	
Morphine sulfate syrettes, 0.015 Gm.	40
Morphine sulfate syrettes, 0.030 Gm.	20
Sulfathiazole, powder, vials, 5 Gm.	24
Ointment, boric acid, ophthalmic, 5% tube, 4 Gm.	2
Jelly, tannic acid, tube, 45 Gm.	4
Alcohol, denatured, ethyl, 70%	1 qt.
Ammonia aromatic spirit, bottle, 60 cc.	1
Caffeine sodium benzoate, 0.5 Gm. ampules	24
Phenobarbital, 0.03 Gm.	200
Procaine hydrochloride tablets, 0.18 Gm.	100
Soap, hand, bar	4
Sodium bicarbonate	1 lb.
Sodium chloride compressed tablets, 1 Gm.	100
DRESSINGS, BANDAGES AND SO ON	
Compress, gauze, 4 by 4 inches	200
Compress, gauze, 2 by 2 inches	400
Pad, surgical, 8 by 10 inches (Dakin)	50
Bandage, muslin, 4 inch	48
Bandage, gauze, 2 inch	48
Bandage, triangular, muslin (50 by 36 by 36 inches)	48
Cotton, absorbent, roll	1 lb.
Cotton batting, roll	2 lb.
Plaster, adhesive, 2 inch, 10 yards	4

Identification Tags

The identification tag (fig. 1) is to be filled out by the first member of a rescue squad, stretcher team or first aid post to reach the casualty. This must be done immediately, because

the patient may lose consciousness. All the required information should be recorded. Information concerning the name and address of the injured and of the "person to be notified" are important to those anxious to locate the injured person. The place where an unconscious patient was found should be noted, as this may be the only clue to his identity.

It is important to record administration of narcotics or application of a tourniquet. Further treatment given at the first aid post or casualty station should be indicated on the back of the identification tag. Warnings concerning possible internal injury, hemorrhage or skull fracture should also be noted on the back of the tag to facilitate sorting of patients on arrival at the hospital.

The tag should be affixed securely to the patient and not to clothing which might later be removed.

IDENTIFICATION TAG

Name ..... (Surname) (Given name)

Address .....

Age .....

Male ☐ Female ☐ Catholic ☐ Protestant ☐ Jewish ☐ Single ☐ Married ☐ Widowed ☐ White ☐ Negro ☐ Other ☐

Person to be notified:

Name .....

Address .....

Phone ..... Relation .....

Where tagged .....

Date ....., 194.... Hour ..... M.

Diagnosis:

Treatment given:

Morphine ..... Tourniquet .....

Where sent .....

Signed .....

Organization .....

16—22481 GPO

Fig. 1.—Identification tag. This measures 3¼ by 6 inches, and the back is used for supplementary information.

A set of symbols to indicate the necessity for priority treatment has been devised to facilitate sorting of patients at the hospital. These symbols should be drawn prominently on the forehead of the patient at the first aid post or casualty station with a red skin pencil:

U	Urgent—requiring priority attention.
TK	Tourniquet.
T	Indicating tetanus antitoxin has been given.
H	Internal hemorrhage.
M¼	Indicating ¼ grain of morphine or
M½	½ grain given.

In addition, a casualty record book will be part of the equipment of each physician's team (fig. 2). A nurse or nurses' aide should be assigned the responsibility for entering a record of every patient seen. This record should include the diagnosis, treatment and disposition.

Emergency Medical Service

It is important that each local defense council in the states along both seaboards and in industrial centers in the interior appoint without delay a chief of Emergency Medical Service who shall be responsible to the local director of civilian defense for the organization of the Emergency Medical Service described in Medical Division Bulletin No. 1. He should be an outstanding medical leader and it is advisable that he be selected in consultation with the state defense council, the local medical society and the local health officer. To facilitate the integration of all local medical resources into a comprehensive program for civilian protection, it is recommended that the local chief of Emergency Medical Service be assisted by a medical advisory council consisting of the local health officer, an experienced hospital executive and representatives of the local medical society, the nursing profession, the American Red Cross and participating voluntary agencies.

DUTIES OF THE LOCAL CHIEF OF EMERGENCY MEDICAL SERVICE

Under the administrative authority of the local director of civilian defense, the duties of the local chief of emergency medical service are:

1. To determine the scope of the activities of all official and voluntary organizations which are to participate in the emergency medical program of civilian defense, to integrate these organizations into the comprehensive local program and to assist them in expanding their activities to the limit of their resources in personnel and equipment.

2. To assist hospitals in the locality to organize, equip and train emergency medical field units as outlined in Medical Division Bulletin No. 1, "Emergency Medical Service for Civilian Defense."

3. To inspect and select sites for the establishment of casualty stations.

4. To make a spot map of the locality, indicating the locations of hospitals, appropriate sites for casualty stations, depots for storage of stretchers, blankets and collapsible cots and the locations of rescue squads. The map should indicate the number of emergency medical squads in each hospital. Copies of the map should be supplied to control centers, police and fire departments, the health department, the local Red Cross chapter, the state defense council, the regional director, the regional medical officer and to all cooperating hospitals.

5. To plan and establish adequate transportation service for casualties and medical personnel in consultation with local government departments, the American Red Cross and voluntary agencies.[1]

6. To arrange with the local control authority for field drills of emergency medical units and rescue squads in collaboration with police and fire auxiliaries, disaster relief and canteen services of the American Red Cross, the ambulance transport service and other civilian defense units and to supervise such drills.

7. To make an inventory of hospital beds in the locality and of the possibilities for emergency expansion in bed capacity.

8. To assist the authorities charged with preparing plans for evacuation in making an inventory of hospitals, convalescent homes, sanatoriums, hotels and other structures within a radius of 50 to 100 miles which might be used as base hospitals to which patients in city institutions could be evacuated.

9. To assist the local volunteer office in establishing courses for volunteers in the field of health, medical care, nursing and related activities.

10. To stimulate recruitment of volunteers for nurses' aide courses of the American Red Cross, assist the local Red Cross chapter in establishing training centers for volunteer nurses' aides at appropriate hospitals and assist the Red Cross placement bureau in placing nurses' aides with hospitals, clinics, health departments and field nursing services after completion of training.

11. To stimulate and guide extension of first aid training courses as widely as possible among the local population through the American Red Cross and other official and voluntary agencies.

12. To stimulate and guide industrial plants, business establishments and government bureaus in the locality in the training

1. A bulletin on transportation for the Emergency Medical Service is in preparation. It will include plans for stretcher teams, messenger service, ambulance and other transport needs of the Emergency Medical Service.

and organization of effective first aid detachments among the employees.

13. To collaborate with state and local health departments and through them with the regional sanitary engineer in a comprehensive program for the protection of the community against emergency sanitation hazards.

14. To collaborate with local and state defense councils, Office of Civilian Defense, Federal Security Agency, Children's Bureau and other local, state and federal authorities in the preparation of plans for evacuation, with particular attention to the medical needs of the population under such circumstances.

15. To keep the community and particularly the members of the health and medical professions and the participating official and voluntary organizations informed of the plans and activities of the local emergency medical service.

NAME	ADDRESS	AGE	SEX	RACE	WHERE FOUND	HR.	DIAGNOSIS	TREATMENT	DISPOSITION	HR.	DOCTOR

Fig. 2.—Information tabulated in the Casualty Record Book.

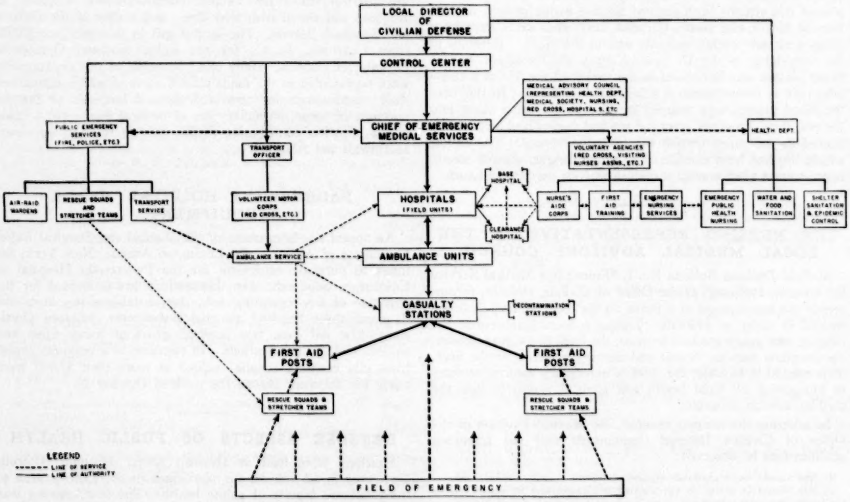

Fig. 3.—Organization of local emergency medical services.

Glossary of Terms Used in Publications of the Medical Division of the Office of Civilian Defense

Emergency medical field unit.—A group of physicians, nurses, orderlies and volunteer nurses' aides organized, equipped and trained for field casualty service in the event of a disaster.

Emergency medical squad.—A subdivision of a field unit consisting of two or four physicians and an equal number of nurses and of nursing auxiliaries. A squad comprises the personnel required to operate a casualty station.

Emergency medical team.—A subdivision of a squad consisting of one physician, nurse and one or more orderlies or nurses' aides. Team comprises the personnel required to operate an advanced first aid post.

Casualty station.—A site designated in advance for occupancy by an emergency medical squad in the event of a disaster.

First aid post.—A site close to the scene of disaster which is occupied temporarily to administer emergency first aid, classify casualties and expedite their transfer to a hospital.

Mobile first aid post.—A large enclosed truck or van constructed and equipped to serve as a first aid post when no suitable structures are available in a devastated area.

First aid detachment.—A group of employees of an industrial plant, business establishment or government department who have been trained in first aid and organized under a detachment leader for service to other employees in the event of a disaster.

Rescue squad.—A specially trained group of fire auxiliaries equipped with demolition tools for the extrication of casualties from wrecked buildings.

Stretcher team.—A group of four or more volunteers who have been trained in first aid and stretcher bearing and who assist the rescue squad by transporting stretcher cases from the scene of a disaster to a first aid post.

Incident.—Devastation of a building or area by explosive or incendiary bombs.

Decontamination squad.—A group of auxiliaries of the sanitation department trained and equipped to decontaminate localities and structures in order to rid them of persistent chemical agents.

Decontamination stations.—A special type (or subdivision) of a casualty station designed to decontaminate both injured and uninjured persons suffering from the effects of chemical agents, before they are transferred to a hospital.

Medical depot.—Site for the storage of stretchers, collapsible cots, blankets and other heavy equipment intended for casualty stations, usually located at transportation centers, clinics, police and fire houses and other suitable places.

Location of Regional Offices

First Civilian Defense Region—101 Milk Street, Boston.

Second Civilian Defense Region—111 Eighth Avenue, New York.

Third Civilian Defense Region—400 Cathedral Street, Baltimore.

Fourth Civilian Defense Region—Room 150 Hurt Building, Atlanta, Ga.

Fifth Civilian Defense Region—427 Cleveland Avenue, Columbus, Ohio.

Sixth Civilian Defense Region—120 South LaSalle Street, Chicago.

Seventh Civilian Defense Region—620 World Herald Building, Omaha.

Eighth Civilian Defense Region—Room 1014 Majestic Building, San Antonio, Texas.

Ninth Civilian Defense Region—233 Sansome Street, San Francisco.

BLOOD PLASMA NEEDED FOR THE ARMY AND NAVY

The Surgeon General of the Army, Major Gen. James C. Magee, has advised the American Red Cross that 1 pint of blood from each of one hundred thousand volunteer donors is required to meet the current emergency needs in the U. S. Army in this country and elsewhere. This need, General Magee said, is immediate and is not a project to collect and store blood for future use in case of war. If the country became involved in war, a far greater amount of blood plasma would be needed. It was also revealed that the U. S. Navy needs 100,000 units of blood plasma.

The Red Cross, therefore, is putting into effect plans for a great expansion in blood donor facilities. Whereas now blood donations are being made in seven cities, the Red Cross in the immediate future will have twenty-two local chapters engaged in this activity. Whereas only one laboratory is now engaged in processing the blood donated, the national director of the blood donor service, Dr. G. Canby Robinson, said that arrangements have been made with seven laboratories for the processing of the blood donated. These laboratories are doing this work on a nonprofit basis, and the Army and Navy pay only for the actual processing, as the blood is collected and shipped to the laboratories by the Red Cross. Some of this dried blood plasma has already been shipped for use in the present maneuvers in North and South Carolina, and other units have been shipped to our foreign outposts and to the Navy. Recently in the torpedoing of the U. S. S. *Kearny* the important role of blood plasma was illustrated in the saving of the life of a sailor who now is recuperating in a hospital in Iceland. In this case the blood plasma was dropped by parachute from a plane into the sea, then recovered from the sea and resterilized and administered to the sailor aboard the torpedoed vessel. The sailor, whose life had been considered in grave danger, showed steady improvement after several transfusions with the blood plasma.

THE NURSING REPRESENTATIVE IN THE LOCAL MEDICAL ADVISORY COUNCIL

Medical Division Bulletin No. 1, "Emergency Medical Service for Civilian Defense," of the Office of Civilian Defense, recommends the appointment of a nurse on the local medical advisory council in order to promote effective cooperation between the chief of emergency medical services, the local Red Cross chapter, the hospitals and the health and nursing agencies in the area. This council is to assist the chief of emergency medical services in integrating all local health and medical resources into the civilian defense program.

In selecting the nursing member, the Medical Division of the Office of Civilian Defense recommends that the following qualifications be observed:

1. She should be a graduate registered nurse.
2. She should be active in the nursing profession and be recognized by the local nurses as a leader.
3. She should be available to attend meetings.

If the nursing representative on each local medical advisory council is selected on this basis, she will secure the cooperation of the entire nursing profession in the training and subsequent use of volunteer nurses' aides.

CIVILIAN DEFENSE WEEK

During Civilian Defense Week, Friday, November 14, was designated "Health and Welfare Day" in order to emphasize the importance of a healthy population as the foundation for strong military defense, to minimize the economic and social disturbances caused by the impact of the defense program and to promote the cause of physical well-being.

On Health and Welfare Day, emphasis was placed on the fact that protection of civilians includes protection of their physical well-being by proper exercises, nutrition and medical care, protection of their social welfare by adequate economic security and by adequate educational, recreational and housing facilities.

Every state defense council already has a nutrition committee whose function it is to see that local defense councils in every community pay close attention to the matter of proper food.

The Office of Civilian Defense has initiated a national program to promote physical fitness under the general direction of John B. Kelly, assistant director, a famous Olympic athlete. This program, in which national figures in the field of sports have been recruited, is projecting a national program which, it is expected, will affect the physical training of every man, woman and child in the nation.

The Medical Division of the Office of Civilian Defense has initiated a program of Emergency Medical Service designed to affect communities of every size, to meet conditions occasioned by actual attack. These plans include base hospitals, evacuation and clearance hospitals, casualty stations, first aid posts, decontamination stations, transportation services, emergency public health nursing, emergency water and food protection, canteen facilities and every service that would be essential under emergency conditions.

BUNDLES FOR BRITAIN

Bundles for Britain, Inc., 745 Fifth Avenue, New York City, cabled funds totaling $20,760, about November 1, to the London headquarters to assist twenty nongovernment hospitals in England and the British Red Cross and people of the Orkney and Shetland Islands. The largest gift in this sum was $3,000 from Charlotte, N. C., for the Royal National Orthopedic Hospital in London. Many other branches of this organization were represented in the funds cabled, some of which earmarked their contributions for certain designated hospitals or for the purchase of some particular type of medical equipment. Some of the branches contributing to this fund were from far away, as Hawaii and Alaska.

PADEREWSKI HOSPITAL NEEDS EQUIPMENT

An appeal has been made by the Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York, for funds to purchase equipment for the Paderewski Hospital in Edinburgh, Scotland. Ten thousand dollars is wanted for the purchase of five operating sets, one portable x-ray unit, five thousand three hundred assorted instruments, nineteen physicians' first aid kits, two hundred gross of x-ray films and various biologic preparations. In response to a previous appeal from this hospital, supplies valued at more than $7,000 were ready for shipment abroad the week of October 20.

DEFENSE ASPECTS OF PUBLIC HEALTH

Meetings were held at Herman Kiefer Hospital, Detroit, November 5, 12 and 26, for physicians in the Detroit area to study defense aspects of public health. The first meeting was addressed by Dr. Thomas Francis of the University of Michigan on "Influenza Control as a Problem in National Defense." These meetings are sponsored by the Wayne University College of Medicine, the Wayne County Medical Society and the Detroit Department of Health and other professional groups.

NAVY CONSULTANT APPOINTED

The Surgeon General of the Navy announced the appointment of Dr. Wilbur A. Sawyer, the director of the International Health Division of the Rockefeller Foundation, as an honorary consultant to the Medical Department of the U. S. Navy.

NAVY MEDICAL MEETING

At a meeting of the medical and dental officers of the U. S. Navy at the Naval Medical School, Washington, D. C., November 3, Lieut. Comdr. LeRoy D. Fothergill, M. C., discussed "The Problem of Diphtheria in the Armed Services."

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware:

ALTERBAUM, George, 1st Lieut., Brooklyn, Camp Davis, N. C.
AYARS, Laurence S., 1st Lieut., Roslyn Heights, N. Y., Camp Blanding, Fla.
BAKER, Augustus L., Jr., 1st Lieut., Dover, N. J., Fort Jay, N. Y.
BEIN, Solomon S., Captain, Brooklyn, Mitchel Field, N. Y.
COHN, Mortimer M., 1st Lieut., Brooklyn, Camp Polk, La.
CRILLY, James A., 1st Lieut., Elizabeth, N. J., Fort Jackson, S. C.
D'AGATI, Vincent C., 1st Leiut., Jackson Heights, N. Y., Fort McClellan, Ala.
DORMONT, Richard Edward, 1st Lieut., Brooklyn, Fort Bragg, N. C.
DUBINS, Henry B., 1st Lieut., Brooklyn, Fort Jackson, S. C.
FISHER, Hyman, Major, Laurelton, L. I., N. Y., Camp Wheeler, Ga.
GARSON, Byron Jerome, 1st Lieut., New York, Fort McPherson, Ga.
HELDMAN, Arthur, 1st Lieut., New York, Camp Shelby, Miss.
HERZFELD, Melvin G., Lieut. Colonel, New York, Camp Gordon, Augusta, Ga.
JELSOMINO, Samuel J., 1st Lieut., Buffalo, Fort Niagara, N. Y.
JONES, John A., 1st Lieut., New York, Fort Dix, N. J.
KREININ, Sidney, 1st Lieut., Brooklyn, Camp Shelby, Miss.
LING, William Soy Ming, 1st Lieut., New York, Fort Knox, Ky.
MANCUSI-UNGARO, Ludwig E., 1st Lieut., Brooklyn, Fort Knox, Ky.
McWHORTER, John E., 1st Lieut., Englewood, N. J., Fort Knox, Ky.
MILLER, Clark F., 1st Lieut., New Brunswick, N. J., Fort Dix, N. J.
MILLIGAN, Paul R., 1st Lieut., Orange, N. J., Camp Gordon, Ga.
MINERVA, Frank, 1st Lieut., Brooklyn, Fort Bragg, N. C.
PENNOYER, James, 1st Lieut., Montclair, N. J., Camp Davis, N. C.
ROSENBERG, Theodore, 1st Lieut., New York, Fort Bragg, N. C.
SAND, Abraham B., 1st Lieut., Burlington, N. J., Fort Dix, N. J.
SCHWARTZ, Frederick, Captain, Brooklyn, Camp Upton, N. Y.
SHIRES, Edward B., 1st Lieut., Rochester, N. Y., Fort Bragg, N. C.
SPIRTES, Morris A., 1st Lieut., New York, Fort Bragg, N. C.
STEIN, Benjamin M., 1st Lieut., Hempstead, L. I., N. Y., Camp Shelby, Miss.
STIEGLER, Charles F., 1st Lieut., New York, Fort Bragg, N. C.
THRELKELD, Lal D., 1st Lieut., Syracuse, N. Y., Fort Bragg, N. C.
VANDERCAR, Edward J., 1st Lieut., Cohoes, N. Y., Fort Bragg, N. C.
VINCI, Vincent J., 1st Lieut., New York, Fort Dix, N. J.

Orders Revoked

JACOBS, Ralph, 1st Lieut., Brooklyn, Fort McClellan, Ala.

FIFTH CORPS AREA

The following additional medical reserve corps officers have been ordered to duty by the Commanding General, Fifth Corps Area, which comprises the states of Ohio, West Virginia, Indiana and Kentucky:

BIZOT, William H., 1st Lieut., Louisville, Ky., Erie Proving Ground, Lacarne, Ohio.
DAVIS, Daniel, 1st Lieut., Toledo, Ohio, Camp Perry, Ohio.
DORMANN, Jack, 1st Lieut., Indianapolis, Fort Knox, Ky.
EARP, Evason B., Major, Indianapolis, Camp Perry, Ohio.
HALL, Joseph E., 1st Lieut., New Cumberland, W. Va., Fort Thomas, Ky.
HANIPAN, Richard K., 1st Lieut., Clarksburg, W. Va., Fort Knox, Ky.
HUGHES, Carlisle B., Jr., 1st Lieut., Huntington, W. Va., Fort Knox, Ky.
JOHNSTON, Donald D., Lieut. Col., Fort Wayne, Ind., Fort Hayes, Ohio.
JONES, Paul A., 1st Lieut., Lyons, Ind., Fort Hayes, Ohio.
KIRCH, Leo N., 1st Lieut., Indianapolis, Fort Benjamin Harrison, Ind.
McCANN, Harold F., 1st Lieut., Clarksburg, W. Va., Camp Shelby, Miss.
McEWEN, John C., 1st Lieut., Van Lear, Ky., Fort Thomas, Ky.
MALLIN, Lloyd P., 1st Lieut., Cincinnati, Fort Knox, Ky.
MURRAY, Hershell B., 1st Lieut., West Liberty, Ky., Fort Hayes, Ohio.
NORMAN, William H., 1st Lieut., Indianapolis, Erie Proving Ground, Lacarne, Ohio.
ROOT, Harold E., 1st Lieut., Bellevue, Ohio, Fort Knox, Ky.
SALSBERY, Otto N., 1st Lieut., Norwood, Ohio, Fort Knox, Ky.
SHALLENBERGER, David W., 1st Lieut., Cleveland, Camp Perry, Ohio.
SITES, Charles J., 1st Lieut., Upper Tract, W. Va., Camp Shelby, Miss.
TODD, Gordon L., Jr., 1st Lieut., Princeton, W. Va., Fort Benjamin Harrison, Ind.
VAN NESS, William C., 1st Lieut., Summitville, Ind., Fort Knox, Ky.
WALKER, James S., 1st Lieut., Indianapolis, Erie Proving Ground, Lacarne, Ohio.
WARREN, Carrol B., 1st Lieut., Marshall, Ind., Fort Benjamin Harrison, Ind.
WATSON, Thomas W., 1st Lieut., Wayne, Ohio, Camp Perry, Ohio.
WILLIAMS, Fielding P., 1st Lieut., Huntingburg, Ind., Camp Grant, Ill.
ZAPOLAN, Wolfe, 1st Lieut., Dayton, Ohio, Fort Hayes, Ohio.

EIGHTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Eighth Corps Area, which comprises the states of Colorado, Arizona, New Mexico, Oklahoma and Texas:

ATKINS, Paul N., 1st Lieut., Muskogee, Okla., Station Hospital, Fort Sill, Okla.
AULT, Charles A., 1st Lieut., Dallas, Texas, Station Hospital, Fort Sam Houston, Texas.
BERSHOF, Edward, 1st Lieut., Denver, Station Hospital, Fort Sam Houston, Texas.
CARRINGTON, William L., 1st Lieut., Mexia, Texas, Station Hospital, Fort Sam Houston, Texas.
CHEATWOOD, William R., 1st Lieut., Ada, Okla., Station Hospital, Camp Wallace, Texas.
CLARK, Richard Gwyn, Captain, Gainesville, Texas, Station Hospital, Fort Sill, Okla.
COATES, Rugie Reginald, 1st Lieut., Oklahoma City, Station Hospital, Fort Sill, Okla.
ELLISON, Gayfree, 1st Lieut., Norman, Okla., Station Hospital, Fort Sill, Okla.
FLINTER, Marcus H., 1st Lieut., Phoenix, Ariz., Station Hospital, Fort Bliss, Texas.
GOTTLICH, Arthur Paul, 1st Lieut., Dallas, Texas, Station Hospital, Fort Sill, Okla.
HARRIS, Hunter Pickney, 1st Lieut., Fulshear, Texas, Station Hospital, Fort Sam Houston, Texas.
HOLLEY, Sion W., 1st Lieut., Farmingdale, N. Y., Station Hospital, Fort Sam Houston, Texas.
KOBERG, Frederick J., 1st Lieut., Big Spring, Texas, 55th Medical Battalion, Fort Sam Houston, Texas.
KOST, Louis Branard, 1st Lieut., Galveston, Texas, Station Hospital, Fort Sam Houston, Texas.
LESKIN, Louis Woron, 1st Lieut., Waco, Texas, Station Hospital, Fort Sam Houston, Texas.
MIXSON, William Charles, 1st Lieut., Kirbyville, Texas, Station Hospital, Fort Sill, Okla.
MONTGOMERY, Robert E., Jr., 1st Lieut., Douglas, Ariz., Station Hospital, Fort Sill, Okla.
PRATHER, Frank William, 1st Lieut., Sulphur, Okla., 38th Infantry, Fort Sam Houston, Texas.
REYNOLDS, John Haynes, 1st Lieut., Muskogee, Okla., Station Hospital, Fort Sill, Okla.
SHAVER, Benjamin Borrum, 1st Lieut., San Antonio, Texas, Station Hospital, Fort Sam Houston, Texas.
SMITH, George Paul, 1st Lieut., Denver, 36th Evacuation Hosp., Fort Sam Houston, Texas.
SOLIS, Rene Adolfo, 1st Lieut., Rio Grande City, Texas, Recruiting Station, Lubbock, Texas.
WOOD, Joe Billy, 1st Lieut., Sulphur Springs, Texas, Station Hospital, Fort Sill, Okla.

Orders Revoked

ALLEN, Lloyd R., Lieut. Col., Colorado Springs, Colo.
ARRINGTON, John H., 1st Lieut., Wichita Falls, Texas.
BARRETT, John H., 1st Lieut., Palestine, Texas.
CHRISTMAN, Edmund E., 1st Lieut., Joplin, Mo.
CLARK, Ralph O., 1st Lieut., Oklahoma City.
COLLINS, William A., 1st Lieut., El Paso, Texas.
DAY, Merriwether L., 1st Lieut., Phoenix, Ariz.
FARNUM, Lorenzo M., Jr., 1st Lieut., Oklahoma City.
FRISSELL, Ben P., Captain, Phoenix, Ariz.
JOHNSON, Emmett R., 1st Lieut., Topeka, Kan.
KERR, Walter C. H., 1st Lieut., Picher, Okla.
LO BELLO, Leon C., 1st Lieut., Dallas, Texas.
MAYFIELD, Warren T., Captain, Norman, Okla.
McGEHEE, Charles L., Captain, San Antonio, Texas.
MOFFITT, Laurl W., 1st Lieut., Tucson, Ariz.
MOLHOLM, Clifford E., 1st Lieut., Crownpoint, N. M.
OATES, La Ried S., 1st Lieut., Center, Texas.
PERRY, James H., 1st Lieut., Fredericksburg, Texas.
ROBINSON, Cecil A., 1st Lieut., Kermit, Texas.
WYSS, Herbert E., 1st Lieut., Keller, Texas.

Relieved from Active Duty

ADAMS, Blair S., 1st Lieut., Camp Hulen, Texas.
BOERSMA, Donald, 1st Lieut., Fort Bliss, Texas.
ELKINS, Marvin, 1st Lieut., Fort Sill, Okla.
LAWRENCE, Buell Avant, Captain, Fort Sill, Okla.
MORGAN, Thomas Lomax, 1st Lieut., Fort Huachuca, Ariz.

ORGANIZATION SECTION

MEDICAL ECONOMIC ABSTRACTS

MEDICAL CARE FOR SOCIAL SECURITY CLIENTS IN ILLINOIS

The Illinois Department of Public Welfare has issued instructions to county medical advisory committees concerning the methods of supplying medical care to persons receiving old age assistance or who fall under the aid to dependent children program. The federal goverhment will match state funds for old age assistance only when monthly payments are made directly to the recipient. Payments for services cannot be made directly to professional practitioners. All old age assistance is limited to $40 a month. If the total does not amount to $40, an allowance to meet the cost of medical or dental care may be included in the monthly payment when the need for such care has been established. This is determined through discussion by the recipient with the county department of public welfare. The need for such care must be established through statements by physicians giving diagnosis and cost of medical care.

It is possible to include a small medical allowance without a physician's recommendation for the purpose of meeting the recipient's "medicine chest" needs. If it is not possible to include the cost of medical care within the $40 monthly maximum, medical and surgical or hospital care may be authorized by the township supervisor. The federal Social Security board has recommended an amendment to the federal Social Security act by which funds may be turned over to the state specifically for medical care purposes without the requirement of cash payment to the recipient. If this amendment becomes a law and is followed by appropriate state enabling legislation, direct payments may be made to physicians and dentists for services given to old age pensioners and dependent children.

The Division of Public Assistance has asked the Illinois State Medical Association to cooperate in planning a medical care program, and the division has been meeting with a state advisory committee on medical care since January 1941. The Illinois State Medical Association was requested to appoint county medical advisory committees. These committees will cooperate with the county departments in medical matters. The Division of Public Assistance states that its "medical care program has been planned so that the traditional relationship between the patient and the physican may be continued and a free choice of physician recognized."

PHYSICIANS GO TO SMALL TOWNS

To test the truth of the allegation that recently graduated physicians refuse to practice in small towns, Dr. J. F. Hassig, secretary of the Kansas State Board of Medical Registration and Examination, made a survey of the sizes of the towns in which physicians have found locations during the past ten years.[1] The result of this study is given in the accompanying table.

According to the census of 1930 there were 411,202 persons living in the towns of 5,000 population or less, and the survey showed that 203 physicians started practice in these towns.

Locations of Physicians by Size of Towns

Year	Under 1,000	1,000 to 2,000	2,000 to 3,000	3,000 to 4,000	4,000 to 5,000	5,000 to 10,000	10,000 to 15,000	15,000 to 20,000	20,000 to 30,000	30,000 to 125,000
1930.....	8	5	6	4	1	3	5	1	4	6
1931.....	4	4	5	1	0	5	8	7	1	11
1932.....	7	7	1	3	2	7	7	1	2	13
1933.....	5	4	0	4	6	1	10	2	2	7
1934.....	8	5	6	2	0	2	3	0	2	17
1935.....	5	4	4	3	4	7	7	3	2	20
1936.....	10	7	1	3	4	7	7	1	2	21
1937.....	4	9	5	3	2	4	9	0	1	21
1938.....	8	8	4	1	3	3	13	2	1	19
1939.....	5	4	1	0	3	1	7	4	3	34
Total..	64	57	33	24	25	40	81	21	20	169

In the cities having more than 5,000 population there were 622,979 persons, and 332 physicians started practice in these during the decade. It is impossible to determine to what extent the approximately 850,000 persons living outside any incorporated place were served by the physicians in the different size cities, but the study would certainly seem to indicate that the smaller cities have not been avoided by physicians entering practice.

Kansas has no county not served by a doctor of medicine, nc areas more than 30 or 35 miles from a hospital, and the overwhelming majority of its areas are 10 or 15 miles or less distance from a hospital. It has almost the national average of population per physician, and its age groups of physicians and its specialists are well distributed throughout the state.

1. Locations, editorial, J. Kansas M. Soc. **42**: 299 (July) 1941.

WOMAN'S AUXILIARY

Pennsylvania

Dr. Chester K. Kistler, president of the Berks County Medical Society, recently presented awards to the winners of the Health Essay Contest conducted by the auxiliary in the high schools of Berks County. Eleven schools entered the contest and 168 essays were submitted. Six prizes were awarded.

The Philadelphia County auxiliary recently held its eleventh annual Health Institute. The speakers were Dr. Francis F. Borzell, president of the state medical society; Major James B. Mason, unit instructor of the Medical Reserve Corps; Capt. John B. Kaufman, district medical officer, Fourth Naval District, U. S. Navy; Dr. Malcolm W. Miller, allergist at the Lankenau Hospital, Philadelphia; Mrs. Maxwell Lick, president of the state auxiliary; Dr. Leon H. Collins Jr., chairman of the Pneumonia Control Committee of the Philadelphia County Medical Society; Dr. Edward A. Strecker, consultant at the Pennsylvania Hospital, Philadelphia, and Dr. Edward L. Bortz, president of the Philadelphia County Medical Society. A tribute was paid to Mrs. Wilmer Krusen, the founder of the Health Institute. Mrs. Krusen was elected an honorary member of the auxiliary and presented with a bouquet of flowers. The theme of the institute was "Medicine and the National Crisis" and was prepared by Dr. Bortz.

Texas

The Henderson County auxiliary met, September 16, at the home of the president, Mrs. B. C. Wallace of Athens, who gave a report of the recent meeting of the state executive board at Dallas. Mrs. R. H. Hodge read an article entitled "Our Ailing Mental Hospitals."

The Smith County auxiliary at its last meeting in the spring voted to dispense with the usual auxiliary program, meeting instead on the regular meeting day as a unit with the local Red Cross chapter in the surgical dressings department. Auxiliary dues will be paid and affiliation maintained with the state and national auxiliaries. Business meetings will be held each month as in the past. Each member will serve from 9 a. m. until 12 noon in the rooms of the Red Cross chapter on the regular meeting date, which the Smith County auxiliary has voted as its part in the defense program.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 1817.

CALIFORNIA

Meeting on Nutrition.—Helen S. Mitchell, Ph.D., director of nutrition for the Federal Security Agency, Washington, D. C., was the speaker at a conference of representatives of professional groups of Southern California, November 12, under the auspices of the state nutrition for defense committee and the nutrition committees of the Southern California counties. Dr. Mitchell was formerly research professor of nutrition at Massachusetts State College, Amherst, Mass.

FLORIDA

New County Health Unit.—Okaloosa and Walton counties have set up a full time health service. The two units will be operated independently with separate staffs but will be under the supervision of Dr. Charles W. McDonald, Marianna, who will divide his time between the two counties, newspapers reported.

District Meetings.—The Southeast Medical District Society held its fifth annual session in Hollywood, October 30. Among others, the following spoke: Drs. Eugene C. Chamberlain, Fort Lauderdale, "Digitalis Poisoning"; Lloyd J. Netto, West Palm Beach, "Unrecognized Importance of Minor Injuries," and Gilbert S. Osincup, Orlando, "Observations as a Result of Six Years of Early Feeding of Infants."——Speakers before the fifth annual session of the South Central Medical District Society in Orlando, November 1, included Drs. Thomas M. Rivers, Kissimmee, on "Relation of Vitamin B Complex to Human Pathology"; Don D. C. C. Robertson, Orlando, "Use of Eucupin Solutions in the Production of Prolonged Postoperative Analgesia in Rectal Surgery," and John Randolph Perdue, Miami, "Cesarean Section—A Ten Years Study."—— The Southwest Medical District Society was addressed at its fifth annual session in Bartow, October 31, among others, by Drs. David R. Murphey Jr., Tampa, on "Use of the Miller-Abbott Tube in Cases of Intestinal Ileus"; Joseph J. Ruskin, Tampa, "Spinal Anesthesia," and Arthur H. Weiland, Coral Gables, "Rehabilitation of Child Following Anterior Poliomyelitis."

ILLINOIS

Personal.—Dr. Samuel W. McKelvey, Belleville, has been appointed consulting surgeon for state hospitals at Alton and Jacksonville, it is reported.——Dr. Clifford U. Collins was guest of honor at a banquet given by the Peoria Medical Society, October 8, in recognition of his completion of fifty years in the practice of medicine, all spent in Peoria. He was granted membership in the "Fifty Year Club" of the state medical society.——Dr. Victor M. Brian, Lawrenceville, has been elected chairman of the health division of the petroleum section of the National Safety Council, Chicago.——Dr. Herbert L. Pettitt, Morrison, has been named assistant health director of the state department of public health, with headquarters in Springfield.——Dr. William M. Miller, Cabery, has received a gold plaque from the Illinois Central Railroad, denoting his completion of fifty years' service.

Chicago

Personal.—Dr. Lloyd L. Arnold has been given a year's leave of absence as professor of bacteriology and public health, University of Illinois College of Medicine, to finish writing a textbook on preventive medicine and public health, it is reported. ——Dr. Leo A. Kaplan has been appointed assistant director of the behavior clinic of the Criminal Court of Cook County.

Society News.—Dr. Horton C. Hinshaw, Rochester, Minn., will address the Chicago Tuberculosis Society at the Bismarck Hotel, November 27, on "Chemotherapy in Experimental Tuberculosis."——Dr. Gladys R. H. Dick addressed the American Medical Women's Association, Branch No. 2, November 12, on "Prevention and Therapy of Scarlet Fever."——Among others, John I. Nurnberger spoke before the Chicago Pathological Society, November 10, on "Method for Determining the Viscosity of Venous Blood."

INDIANA

A Veteran County Secretary.—The *Journal* of the Indiana State Medical Association for November comments on the many years of service of Dr. Wilson T. Lawson, Danville, as secretary of the Hendricks County Medical Society. Dr. Lawson has served continuously in this capacity since 1879 with the exception of three years when he was president of the society.

Board of Registration in Medicine.—Dr. Hugh W. Eikenberry, Peru, has been named a member of the state board of registration in medicine, succeeding Dr. James M. Hicks Jr., Huntington, and Clarence F. Aumann, D.C., Indianapolis, succeeding Harry K. McIlroy, D.C., Indianapolis. Members who were reappointed are Dr. Norris E. Harold, Indianapolis; Dr. Jesse W. Bowers, Fort Wayne; Dr. Hobart C. Ruddick, Evansville, and Clarence B. Blakeslee, D.O., Indianapolis.

LOUISIANA

Society News.—Dr. Charles J. Bloom, New Orleans, addressed the Tangipahoa Parish Medical Society, recently, in Hammond on "Recent Advances in Pediatrics."——The Orleans Parish Medical Society was addressed in New Orleans, October 13, by Drs. Howard R. Mahorner, New Orleans, on "Sympathetic Nerve Block in Rehabilitation of the Injured Extremity" (Case Report).

Award to Dr. Matas.—Dr. Rudolph Matas, since 1928 professor of general and clinical surgery, emeritus, Tulane University of Louisiana School of Medicine, New Orleans, was presented with the Times-Picayune Loving Cup for 1940, October 25, "in recognition of his years of unselfish service to his fellowman." Leonard K. Nicholson, president of the *Times-Picayune* and the New Orleans *States*, made the presentation and Dr. Maxwell E. Lapham, dean of the medical school and W. R. Irby professor of obstetrics, presided. A luncheon followed the ceremony, which was held in the auditorium of the Hutchinson Memorial Building as a part of the "home coming" program. Dr. Matas is the third physician to receive the award since it was established in 1901, the other two being Dr. Arthur W. De Roaldes in 1905 and Dr. Sara T. Mayo in 1910.

MAINE

Society News.—The New England Society of Psychiatry was addressed at its regular fall meeting in Augusta, October 17, by Major Donald E. Currier of the Massachusetts National Guard, Wenham, and chief of the medical division, Massachusetts Selective Service System, Boston, on "Medical and Psychiatric Features of the Selective Service Program."——Dr. Clarence Wesley Sewall, Boston, discussed "Eclampsia" before the Kennebec County Medical Association in Gardiner September 18. ——Dr. Frederick T. Hill, Waterville, addressed the Piscataquis County Medical Association in Dover-Foxcroft, September 18, on postgraduate education.

MARYLAND

Personal.—Dr. William Ross Cameron, Baltimore, on September 13 was commissioned senior surgeon in the U. S. Public Health Service for duty as regional medical officer of the Third Civilian Defense Area. Dr. Cameron served for many years as public health administrator in Alabama and West Virginia and with the Maryland State Department of Public Health.——Dr. George W. Corner, director of the department of embryology of the Carnegie Institution of Washington at Baltimore, has been elected a foreign corresponding member of the National Academy of Medicine of Argentina.

Dr. McCollum to Deliver Harben Lectures in Canada. —Elmer V. McCollum, Sc.D., professor of biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, will deliver the Harben Lectures of the Royal Institute of Public Health and Hygiene of London, England, for 1941. Because of war conditions, the University of Toronto has been designated for the delivery of the lectures December 1-3. Dr. McCollum will discuss "Nutritional Science and Public Health." The separate titles of the lectures are "Inorganic Elements Which Present Nutrition Problems of Practical Importance," "Problems Presented by the Availability of Low-Cost Synthetic Vitamins—Enrichment, Fortification and Restoration of Refined Foods" and "Nutrition Problems Presented by Low Income Families."

MINNESOTA

Society News.—The Minnesota Society of Neurology and Psychiatry was addressed in St. Paul, September 9, by Drs. Philip H. Heersema, Rochester, on "Symptomatic Treatment of Hysteria" and Alex Blumstein and Carl M. Eklund, Minneapolis, "Equine Encephalitis in the Human."—The Wabasha County Medical Society was addressed in Wabasha, October 9, by Drs. Donald G. Mahle, Plainview, who gave his presidential address on undulant fever; Edward N. Cook, Rochester, Minn., enuresis; Thomas G. Wellman, Lake City, "Ligation in Treatment of Varicose Veins," and Victor F. J. Bruder, Winona, "Carcinoma of the Cervix."—Dr. John R. Meade, St. Paul, discussed diabetes before the Washington County Medical Society, September 9, in Stillwater.

Annual Session of Medical Foundation.—An annual meeting of the Minnesota Medical Foundation was held in the University of Minnesota Union, Minneapolis, November 7, with Dr. Erling S. Platou, Minneapolis, president, presiding. According to a report of the treasurer, Dr. Jennings C. Litzenberg, Minneapolis, the organization now has available more than $40,000 to be used in making grants for research, lectureships and in other ways promoting the interests of medical education in the University of Minnesota. Dr. Morris Fishbein, Editor of THE JOURNAL, spoke on "Medicine in the Emergency." The *Bulletin* of the Minnesota Medical Foundation appeared in November in a new form under the title "Trends in Medical Practice and Research," containing abstracts of recent contributions by members of the faculty and a number of original articles on various subjects.

MISSOURI

Biennial Registration of Physicians Due by December 31.—Every person licensed to practice medicine and surgery in Missouri must register biennially, in odd numbered years, on or before December 31 with the state board of health and at that time pay a fee of $1. If such a person fails to register timely, the required fee plus 50 cents for each month or part thereof of delinquency must be paid to the board. In addition, a person who practices without registering timely may be subjected to a fine of not more than $500 or imprisonment up to six months, or both, for each day of practice without such registering.

NEW MEXICO

Plague Infection.—*Public Health Reports* announces that plague infection was found in a pool of 147 fleas collected from 59 Cynomys gunnisoni zuniensis prairie dogs shot at locations southwest of Ramah, Valencia County, and in another pool of 188 fleas from 29 prairie dogs of the same species shot in a location east of Ramah on September 9.

NEW YORK

Professor of Hygiene and Public Health.—Dr. William T. Clark, associate professor of hygiene and public health at the University of Buffalo School of Medicine, Buffalo, has been appointed professor and head of the department of hygiene and public health to succeed the late Dr. Walter S. Goodale. The latter had held the position for sixteen years prior to his death, October 8, and just a few days before had been made professor emeritus, newspapers reported. Dr. Clark has also been appointed superintendent of the Edward J. Meyer Memorial Hospital, a city institution, where he has been a member of the staff. This position was also held by Dr. Goodale at the time of his death. Dr. Clark graduated at the University of Buffalo School of Medicine in 1925 and received his degree in public health from Johns Hopkins University, Baltimore, in 1937.

New York City

The Harvey Lecture.—Dr. Thomas Francis Jr., professor of epidemiology, School of Public Health, University of Michigan, Ann Arbor, will deliver the second Harvey Society Lecture of the current series at the New York Academy of Medicine, November 27, on "Factors Conditioning Resistance to Epidemic Influenza."

Appointed to Palestine Hospital Staff.—Dr. Henry Wigderson, an instructor in surgery (neurosurgery) at New York University College of Medicine and a member of the staffs of several hospitals, has been appointed head neurosurgeon in the Rothschild-Hadassah-University Hospital at the medical center on Mount Scopus, near Jerusalem. He graduated at the University of Maryland School of Medicine, Baltimore, in 1931. With his wife, he was to leave for Palestine on October 24.

Dinner Marks Expansion of Birth Control Movement.—A dinner was held at the Hotel Roosevelt, October 16, to observe the founding of the first birth control clinic by Mrs. Margaret Sanger, and simultaneously throughout the country twenty-six meetings convened to commemorate the event. The national observance was under the auspices of the Birth Control Federation of America, the National Committee for Planned Parenthood and other civic groups, the New York *Times* reported. As part of the national celebration it was announced that there are now six hundred and twenty-five clinics, of which one hundred and ninety-two are located in public health quarters, now in operation in the country.

Appointments at Columbia.—Appointments recently announced by Columbia University for 1941-1942 include the following:

Dr. Charles C. Wilson, Hartford, Conn., professor of health and physical education at Teachers College.

Drs. David Ulmar, assistant clinical professor of medicine, and Gerald H. Pratt, assistant clinical professor of surgery, in the New York Post-Graduate Medical School and Hospital.

Drs. Frederick A. Mettler, associate professor of anatomy, and Alson E. Braley, assistant professor of ophthalmology in the College of Physicians and Surgeons.

Drs. Myron E. Wegman, assistant professor of child hygiene, and Oscar G. Costa Mandry, assistant professor of tropical medicine in the School of Tropical Medicine of the University of Puerto Rico under the auspices of Columbia in San Juan, P. R.

OHIO

Postgraduate Lectures.—The Ohio State Medical Association resumed its five year program of postgraduate lectures on November 5, when it opened a series in McConnelsville. Other series were started in Dennison on November 6, Ashland on November 7, Springfield on November 12 and Piketon on November 13. The subjects included treatment of burns, chemotherapy, treatment of nephritis, deficiency diseases seen as complications of common medical conditions and control of obstetric hazards.

OREGON

Annual Registration Due December 1.—All practitioners of medicine and surgery holding licenses to practice in Oregon are required by law to register annually on or before December 1, with the secretary of the board of medical examiners, and at that time to pay a fee of $5. A practitioner failing to register is subject to a penalty of $1 for each thirty days, or part thereof, of default, and his failure to reregister within ninety days after December 1 is a misdemeanor.

Society News.—Drs. Howard C. Naffziger and Harry Glenn Bell, San Francisco, addressed the Central Willamette Medical Society in Corvallis October 2. Dr. Naffziger spoke on "Disability in the Upper Extremities from the Scalenus Syndrome," "Causes of Back Pain and Sciatica" and "Needs of National Defense." Dr. Bell discussed "Lesions of the Small Bowel" and "Use of Sulfanilamide and Related Compounds in the Treatment of Lesions of the Colon."—Drs. Leo S. Lucas, Harry C. Blair and Gilbert J. McKelvey, Portland, discussed "Disabilities and Fractures of the Knee Joint" and Dr. John E. Raaf, Portland, "Indian Medicine and the Medicine Man" at a meeting of the Multnomah County Medical Society, Portland, October 1.

PENNSYLVANIA

Personal.—Dr. Edgar S. Buyers, Norristown, who has retired after thirteen years' service as trustee and council of the Second Councilor District, was presented by the membership with a bronze plaque.

Infantile Paralysis in Collingdale.—Five public and parochial schools in Collingdale, Delaware County, were closed on October 29 when 1 case of infantile paralysis was discovered in the borough, newspapers reported. The case was the first in Collingdale this year. Another new case was discovered in Ardmore.

Society News.—Dr. Moacyr E. Alvaro, São Paulo, Brazil, addressed the Reading Society of Ophthalmology and Otolaryngology, October 30, on "Pan American Ophthalmology."—A symposium on infantile paralysis was presented before the Westmoreland County Medical Society in Latrobe, November 4, by Drs. Edmund R. McCluskey and James O. Wallace, both of Pittsburgh.

Philadelphia

Meeting of Ex-Residents.—The fifty-fifth annual dinner of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held on December 2 at the Midday Club, Fidelity-Philadelphia Building. Dr. James W. McConnell will be the guest of honor, and Dr. Russell S. Boles, president of the association, will preside and serve as toastmaster.

First Pancoast Memorial Lecture.—Dr. George W. Holmes, clinical professor of roentgenology, Harvard Medical School, Boston, delivered the first Pancoast Memorial Lecture, November 6, under the auspices of the Philadelphia Roentgen Ray Society, on "Roentgen Diagnosis and Treatment of Primary Pulmonary Neoplasm." At the time of Dr. Henry K. Pancoast's death on May 20, 1939 he was professor of radiology at the University of Pennsylvania School of Medicine and the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania.

RHODE ISLAND

New Medical Board.—Thomas B. Casey, Providence, chief of the division of examiners, announces that a new board of examiners in medicine has been appointed for Rhode Island: Dr. Joseph C. O'Connell, Providence, chairman; Dr. John A. Bolster, Providence, secretary, and Dr. Earl F. Kelly, Pawtucket.

Society News.—A panel discussion on vitamins was presented before the Providence Medical Association, October 6, by Drs. Frank J. Jacobson, William P. Buffum, Banice Feinberg, Harold G. Calder and Reuben C. Bates. All are from Providence. The association devoted its meeting November 3 to a symposium on "The Neuropsychiatric Study of the Naval Recruits." Members of the U. S. Naval Training Station, Newport, participated. Dr. James W. Sever, Boston, discussed "Colles Fractures, a Study of Pre and Post Reduction X-Rays."

TENNESSEE

Changes in Health Personnel.—Dr. Robert E. Rock, Opelika, Ala., who recently succeeded Dr. Alex B. Shipley, Elizabethton, as health director of Carter, Unicoi and Johnson counties, has been appointed associate director of venereal disease control of the state. Dr. Shipley will direct the health unit until the position has been filled.——Dr. Howard C. Stewart has been named director of the Williamson County Tuberculosis Study, Franklin, a position he formerly held until he resigned in September 1938 to become associated with the health department of Cleveland, Ohio. Dr. Stewart succeeds Dr. William J. Murphy, Franklin, who has joined the staff of the Georgia State Department of Health with offices in Decatur.

VERMONT

Dr. Beecher Appointed Dean at Vermont.—Dr. Clarence H. Beecher, professor of medicine at the University of Vermont College of Medicine, Burlington, has been appointed dean of the school to succeed Dr. Hardy A. Kemp, who has assumed a similar position at Ohio State University College of Medicine, Columbus. Dr. Beecher was born in Granville, N. Y., in 1877. He graduated at the Vermont school of medicine in 1900, serving there as instructor and demonstrator in anatomy from 1901 to 1906, instructor in medicine, 1905-1909, and assistant professor of medicine from 1909 to 1911, when he became professor. At one time he served as secretary and president of the Vermont State Medical Society.

VIRGINIA

State Medical Election.—Dr. John M. Emmett, Richmond, was named president-elect of the Medical Society of Virginia at its meeting in Virginia Beach, October 7, and Dr. Roshier W. Miller, Richmond, was inducted into the presidency. Vice presidents of the society are Drs. James W. Anderson, Norfolk, Ernest G. Scott, Lynchburg, and James P. Williams, Richlands. Miss Agnes V. Edwards, Richmond, was reelected secretary. Roanoke was chosen as the place of the annual session next year.

WASHINGTON

Society News.—A symposium on venereal disease was presented before the Pierce County Medical Society, Tacoma, October 14, by Drs. Homer W. Humiston, Leland E. Powers and Carlisle Dietrich, and MacBroom Benjamin, captain, M. C., U. S. Army, Fort Lewis, discussed "The Physician's Role in Tacoma's Home Defense."——Drs. Ralph M. L. Dodson, Portland, Ore., and John A. Kahl, Walla Walla, addressed the Walla Walla Valley Medical Society, Walla Walla, October 9, on "Preparedness from the Surgical Viewpoint" and "Preparedness from the Public Health Viewpoint" respectively. ——Drs. James M. Bowers and Robert E. Mullarky, Seattle, addressed the King County Medical Society, Seattle, October 20, on "Pulmonary Emboli: Report of a Fatal Medical Case" and "Indications and Value of Peritoneoscopy" respectively. Dr. Robert D. Forbes, Seattle, discussed a case of bullet wound of the abdomen.

GENERAL

The American Woman and Her Responsibilities.—A forum on "The American Woman and Her Responsibilities" was held at Stephens College, Columbia, Mo., November 6-8. The discussion aimed to clarify the responsibilities of women in a democracy and sought a program for giving effective direction to their role as the primary force in shaping the ideals, strengths and moral fiber of a nation. Speakers of national prominence in various fields were on the program.

New Secretary of Leper Mission.—Dr. Eugene R. Kellersberger recently returned from Bibanga, Belgian Congo, to accept an appointment as executive secretary of the American Mission to Lepers. The group held its thirty-fourth annual meeting in New York, October 9-11, with the theme devoted to "Freedom for All—from Leprosy." William Jay Schieffelin, Ph.D., presided and Dr. Kellersberger spoke on "Leprosy in the East." Dr. Kellersberger graduated at Washington University School of Medicine, St. Louis, in 1915. He has served as a medical missionary for twenty-four years in the Belgian Congo, the New York *Times* reported. It was announced at the session that $293,672 had been received from 41,000 persons during the fiscal year ended June 30, the largest sum ever received by the group in any one year.

Mead Johnson Prizes.—René J. Dubos, Ph.D., of the Rockefeller Institute for Medical Research, New York, and Dr. Albert B. Sabin, associate professor of pediatrics, University of Cincinnati College of Medicine, Cincinnati, were named recipients of the E. Mead Johnson Awards by the American Academy of Pediatrics during its annual meeting in Boston, October 10. Dr. Dubos received the first award of $500 for his work leading to the development of gramicidin, useful in the treatment of diseases caused by pathogenic bacteria, and Dr. Sabin the second award of $300 for research in diseases of the nervous system caused by viruses. The academy chose Dr. Borden S. Veeder, St. Louis, as president-elect and inducted Dr. Edward C. Mitchell, Memphis, into the presidency. Dr. Clifford G. Grulee, Evanston, Ill., was reelected secretary. The 1942 session of the academy will be in Chicago, the dates to be announced later.

Federation Proceedings.—In March 1942 the Federation of American Societies for Experimental Biology will issue the first number of a quarterly publication to be named the *Federation Proceedings*, which will be published by an editorial board representing the five constituent societies: American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics, American Society for Experimental Pathology and the American Institute of Nutrition. In the past each society has printed its own abstracts in advance of the annual meeting in a separate pamphlet. After the meeting the abstracts were republished in permanent form in the journals of the various societies. In the future a single publication will suffice and abstracts of all the societies will be available in a single volume. The Yearbook will be discontinued. The *Federation Proceedings* will be distributed without charge to the one thousand seven hundred members of the federation. The subscription price will be $4 to nonmembers. Subscriptions and other communications concerning advertising space should be addressed to Dr. Donald R. Hooker, managing editor, 19 West Chase Street, Baltimore.

Public Health Meeting.—Dr. Allen W. Freeman, Baltimore, was named president-elect of the American Public Health Association at the annual session in Atlantic City, October 16, and Dr. John L. Rice, New York, was inducted into the presidency. Other officers are Drs. Donald T. Fraser, Toronto; Eduardo Garrido-Morales, San Juan, P. R., and Pearl McIver, R.N., Washington, D. C., vice presidents; Louis I. Dublin, Ph.D., New York, treasurer, and Dr. Reginald M. Atwater, New York, executive secretary. The 1942 session will be held in St. Louis. A special session was held during the meeting to hear three representatives of the British Ministry of Health: Sir John B. Orr, director of Rowett Research Institute, Aberdeen, Scotland; Sir William Wilson Jameson, chief medical officer of the Ministry of Health, London, England, and Dr. James M. Mackintosh, professor of public health, University of Glasgow, Scotland. At a luncheon session on public health in American defense, Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, retired, Washington, D. C., was presented with a scroll. The presentation was made by Dr. Hugh d'Amato, secretary of the National Department of Health of Argentina on behalf of the Pan American Sanitary Bureau.

Hearing on Identity of Oleomargarine Denied.—Federal Security Administrator Paul V. McNutt announced October 31 that he had notified Ralph E. Ammon, director of the State Department of Agriculture, Madison, Wis., that "it's in

the public interest" to deny the petition of the United Dairy Committee for a rehearing on the standard of identity for oleomargarine established by the Federal Security Agency. The United Dairy Committee, composed of farmers of many of the dairy states and headed by Mr. Ammon, conferred with Mr. McNutt, September 24, and appealed for a rehearing on the entire standard and particularly requested a reexamination of the legal basis for the inclusion of diacetyl as a flavoring ingredient in oleomargarine. This standard became effective on Sept. 5, 1941, following a hearing held in November 1940. After conferring with the Federal Security Agency's legal staff, the administrator said he had been advised that on the evidence already in the record there is no legal basis on which he could prohibit the use of diacetyl in oleomargarine under the authority of the Food, Drug and Cosmetic Act. Mr. McNutt pointed out that basically the definition issued for oleomargarine goes back to that contained in the oleomargarine tax law of 1886, in which Congress recognized oleomargarine as a product made in imitation of butter and imposed specific taxes on its manufacture and sale. He explained that the law authorizes the establishment of definitions and standards for foods when these will promote honesty and fair dealing in the interest of consumers. He contended that the recall of the definition and standard for oleomargarine would result in the removal of necessary protection to the buying public.

Radiological Society of North America.—The twenty-seventh annual meeting of the Radiological Society of North America will be held at the Hotel Fairmont, San Francisco, December 1-5, under the presidency of Dr. William Walter Wasson, Denver. Among the papers listed in the preliminary program are the following:

Dr. Edwin B. Boldrey, San Francisco, Pathology of Brain Tumors and Its Relation to Roentgenologic Diagnosis.
Dr. John D. Camp, Rochester, Minn., Intracranial Calcification of Non-Neoplastic Origin.
Dr. Albert K. Merchant, Stockton, Calif., Roentgen Diagnosis of Fungous Infections of the Intestinal Tract.
Dr. Ernst A. Pohle, Madison, Wis., Roentgen Therapy in Cancer of the Breast: An Analysis of Our Experience at the State of Wisconsin General Hospital During the Last Twelve Years.
Dr. James P. Rousseau, Winston-Salem, N. C., The Value of Roentgen Therapy in the Treatment of Pneumonia Which Fails to Respond to Sulfonamide Therapy.
Paul C. Aebersold, Ph.D., San Francisco, The Cyclotron and Nuclear Physics.
Dr. John H. Lawrence, San Francisco, Artificial Radioactive Elements in the Treatment of Disease.
Dr. Hymer L. Friedell, New York, Bone Lesions in Hodgkin's Disease.
Medical Director Arthur H. Dearing, captain, U. S. Navy, Mare Island, Calif., The Specialist as a Medical Naval Officer.
Gioacchino Failla, Sc.D., New York, Influence of the Medium on the Radiosensitivity of Sperm.

The annual Carman Lecture will be delivered, December 2, by Dr. William Edward Chamberlain, Philadelphia, on "Fluoroscopes and Fluoroscopy."

HAWAII

Personal.—Dr. William M. Shanahan, formerly of Milwaukee, has been appointed assistant psychiatrist to the mental health clinic at Queen's Hospital, Honolulu.——Dr. Charles L. Wilbar Jr., formerly of Philadelphia, has returned to his position as director of the bureau of maternal and child health of Hawaii after a year's study at the Children's Hospital, Cincinnati.——Dr. Frederick K. Lam, Honolulu, was recently appointed general chairman of the United China Relief, Inc., for the Territory of Hawaii.

Territorial Association Publishes Journal.—The *Hawaii Medical Journal* made its appearance with the September issue. It is published by the Hawaii Territorial Medical Association with Dr. Lyle G. Phillips, Honolulu, as editorial director; Dr. Harry L. Arnold Jr., Honolulu, editor, and Miss Elizabeth D. Bolles, Honolulu, secretary and business manager. The initial issue contains papers presented before the fifty-first annual meeting of the association in May. Sections are devoted to "Plantation News," "Medical Preparedness" and "Notes and News." This year it is planned that each county medical society be responsible for one issue of the *Journal*. The November issue will be arranged for by the Honolulu County Medical Association, the January issue by the Hawaii County association, the March issue by the Maui County society and the May issue by the Kauai County society.

FOREIGN

Free Medical Care in New Zealand.—The House of Representatives, Wellington, New Zealand, on October 4 passed a measure creating a system of free medical care beginning November 1, according to the New York *Times*. The measure as adopted permits physicians to practice without direct payment by the state but without the right to collect unpaid fees through the courts. The *Times* reported that some government leaders fear the concessions will lead to high fees, while the patient may recover not more than the equivalent of $1.50 a visit from the social security fund. Under its original plans the government intended to fix fees for physicians at the equivalent of $1 for advice at offices and $1.30 for visits to patients' homes. As a concession to the profession, which threatened to defy the government, the prices were changed to $1.50 in both cases. Patients may now, under the amended measure, pay the physician and later get the money from the social security fund. This plan, under which the patient and not the physician receives the money, was adopted to make the maternity bonus acceptable to the physicians and permit them to be independent of the state, the *Times* reported. Finance Minister Walter Nash assured the House of Representatives on October 8 that funds were available for operation of the free medical care plan beginning November 1. The *Times* reported October 26 that Dr. Sidney D. Rhind, national secretary of the Medical Association, had announced the physicians' defiance of the government. He said doctors would attend patients at the old fees, leaving the patients to obtain from the social security fund what they could. He said further that the government had no contracts with the doctors and that physicians would not cooperate in administering the plan until their rights to go to the courts to collect unpaid fees were restored.

Government Services

Report of Surgeon General of the Navy

According to the annual report of the Surgeon General of the Navy, there were 314 deaths from all causes in 1939, giving a rate of 2.10 per thousand as compared with 2.60 for the preceding year. There were 50 deaths, including 1 suicide, caused by motor vehicle accidents. There were 42 instances of suicide and attempted suicide reported in 1939, resulting in 32 deaths. There were 4 deaths from homicide. Diseases with 127 deaths, injuries with 181 deaths, and poisonings with 6 deaths were responsible for 40.45, 57.64 and 1.91 per cent, respectively, of all deaths. There were 1,201,718 sick days from all causes in 1939, an average of 8.03 sick days per person and 19.67 per admission. There were 22.01 per cent of all personnel constantly on the sick list throughout the year. One thousand five hundred and fifty-two persons were invalided from the service as the result of physical disability in 1939, giving a rate of 10.37 per thousand as compared with 10.59 for the preceding year and 12.23, the median for the preceding nine year period. Diseases caused the invaliding of 115 officers of the navy, 23 officers of the marine corps, 840 enlisted men of the navy, 343 enlisted men of the marine corps, 99 midshipmen and 17 nurses. Injuries caused the invaliding of 10 officers of the navy, no officers of the marine corps, 66 enlisted men of the navy, 35 enlisted men of the marine corps, 4 midshipmen and no nurses. The disability was reported as existing prior to entry into the naval service in 635 cases, of which 617 were for disease and 18 for injury. In addition to 873,433 treatment days at naval hospitals there were 42,875 days for 2,042 patients on the hospital ship U. S. S. *Relief;* 3,848 days for 27 tuberculosis patients at the naval unit, Fitzsimons General Hospital, U. S. Army, Denver, and 15,975 days for 155 insane patients at the Naval Unit, St. Elizabeth's Hospital, Washington, D. C. The 12,847 admissions for venereal diseases gave a rate of 85.7 per thousand in 1939 as compared with 77.45 for the preceding year and 90.28 the median for the preceding nine year period. In 1937 action was taken to remove punitive measures imposed on enlisted men for venereal disease and 1938 was the first full year in which the effect of this step could be observed. The 1938 to 1939 increase in venereal disease incidence is 5.13 per thousand less than that of 1937 to 1938 and may reflect an additional breakdown of the attitude toward concealment of venereal disease and fear of punitive action. The report indicates that the health of the navy was good during 1939 and attributes in part the slight increase in the general admission rate over the preceding year to the induction of large numbers of recruits during the last five months of the year. The number of recruits finally accepted in the navy and marine corps was 33,312, which constituted 25.0 per cent of the average daily enlisted strength, as compared with 15.4 per cent in 1938.

One major disaster occurred in 1939 when the submarine U. S. S. *Squalus* sank off the Isle of Shoals (Portsmouth, N. H.). Twenty-three enlisted men and 1 officer lost their lives by drowning; 32 members of the crew were rescued by means of the diving bell.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 4, 1941.

The Need for Biology in Education

In an address to the British Social Hygiene Council on "Biology and Health," Sir Walter Langdon-Brown referred to the blight which had fallen on European culture, the hapless condition of university life and the subservience of scientific work to the Nazi system. The *Münchener medizinische Wochenschrift*, formerly one of the leading medical journals of the world, had become scientifically negligible and the happy hunting ground of naturopaths and other cranks who happened to catch the Fuehrer's eye. The fate of Pflügers *Archiv für die gesamte Physiologie des Menschen und der Tiere*, for more than seventy years the leading publication of physiologic and biologic research, was also significant. In 1932, the last pre-hitlerian year, it ran to five volumes; in 1938 it was one slim volume of articles mainly written by Japanese and Russians.

Biology impressed on the mind the idea of progress as the increasing complexity and adaptations of animal life were studied. If this study had been pursued with the same intensity as that of physics and chemistry, men might have become so interested in the wonderful processes of life that they would not have been so keen on inflicting death. The general public would have no adequate grasp of the principles of social hygiene until they had some idea of biologic principles. Turning to the problem of venereal disease, in which the British Social Hygiene Council is especially interested, Langdon-Brown suggested that perhaps the romanticizing tendency of the English made them unwilling to face the uncomfortable fact that behind the mystery of the continuity of life lurked the shadows responsible for venereal disease. But it was mainly ignorance of biology that was responsible for failure to realize the natural law that whenever the continuity of life was threatened the impulse to create more life was increased. There had been no sensational rise in the incidence of venereal disease in this war, as there had been in the last. But this was no reason for relaxing the efforts of the British Social Hygiene Council in dealing with the problem of venereal disease.

The Milk Supply

Among the food problems created by the war, the milk supply is one of the most important. The minister of health has made an encouraging report on the prospect for the coming winter. In the last prewar year our consumption was 70 million gallons a month. The minister estimates that the amount available in the worst month of the coming winter will be between 70 and 80 million gallons. Though greater than the prewar amount there is still a problem, as the diminished importation of milk powder and condensed milk has increased the demand for fresh milk. With some difficulty the minister has been restricting consumption to put milk into reserve for the winter in the condensed form. Condensed milk and milk powder equal to 150 million gallons of liquid milk is expected to be available, allowing a supply of 25 millions a month and bringing the total supply up to 100 millions a month, considerably in excess of any consumption that this country has known heretofore.

The supply of milk is controlled so that those with the greatest need shall have first call. Expectant mothers and babies up to the age of 5 years will get a pint daily; children up to 17 half a pint daily in addition to the amount they receive in the schools. Invalids according to their necessities will obtain up to 2 pints daily. It cannot be assumed that we could give these priorities and go on with unrestricted use of milk elsewhere. Last winter children were short of milk in some parts of the country. The minister is therefore asking the fighting services to take much larger quantities of condensed milk, which is particularly suited for their use. A limit will be put on the quantities of liquid milk that can be supplied to catering establishments. They will be given condensed milk and milk powder, which they can use for cooking. For the preparation of meals in schools, milk powder will be used. There will be ample quantities of condensed milk to meet the reasonable needs of every section of the people. It is estimated that a family of six with two children under 5 and two under 17 will be able to get 25 pints of liquid milk weekly, excluding the amount obtained at school. In a small family with one child under 3, 11 pints will be available weekly. Two adults will probably get 4 pints weekly. In addition to all this, supplies of condensed milk will be available when the winter supply of liquid milk is at its lowest. This should be equal to about a further 3 pints of liquid milk a family per week. These represent the minimum figures.

Injuries of the Locomotor System

The war has produced a need for more surgeons with training and experience in the diagnosis and treatment of injuries of the locomotor system. Arrangements have therefore been made for instructional courses extending over six weeks. The surgeons attending the courses will be divided into groups of not more than four, which will be attached to the wards and outpatient department of a senior surgeon experienced in this work. They will have charge of cases, carry out treatment and receive practical demonstrations. They will also do the work and teaching of neighboring hospitals, fracture departments and clinics. The first course will begin at Liverpool, the city which inherits the great orthopedic traditions of Thomas and of Jones. The courses will be conducted by such well known orthopedic surgeons as R. Watson-Jones, T. P. McMurray, B. L. McFarland, F. C. Dwyer, G. E. Thomas and W. R. Mitchell. This course is designed for surgical specialists both in the fighting services and in the emergency medical service (for civilian casualties). The number of entries will be limited to sixteen, for whom accommodation will be arranged in the neighborhood of one of the hospitals.

Norwegian Hospital in London

A Norwegian hospital for the men of the Norwegian Navy and Merchant Service has been in existence for about a year. It has forty-five beds, of which forty are at present occupied. It is staffed entirely by Norwegian physicians and nurses, and the members of the staffs are mainly Norwegian ex-service men. The hospital was inspected by the crown prince of Norway, Prince Olaf, who talked with seamen who served in the Lofoten raid.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 15, 1941.

Control of Tuberculosis in Argentina

The recently formed Comisión Nacional de la Tuberculosis consists of a president, vice president, general secretary and four members, all in office for a term of six years. This commission is to take over the technical and administrative direction of all tuberculosis hospitals, sanatoriums and similar institutes supported with state funds and the technical direction and the administrative control of private institutes subsidized by the state. The commission will erect eighteen city hospitals and twelve rural sanatoriums in various regions; these had already been provided for by the law in question but had not been erected as yet. Further tasks are the erection of schools for the training of personnel, the compilation of statistics, the arrangement of meetings and lectures, education of the public, control of mutual aid societies and the supervision of medicaments. The commission is to concern itself also with the obligation of reporting cases of tuberculosis and with vaccina-

tion. The establishment of provincial and territorial subcommissions is provided for. Prophylactic measures are also to be taken. Organizations that are concerned with the campaign against tuberculosis cannot be founded without approval of the Comisión Nacional.

To begin the examination of the population for tuberculosis, the government of Argentina has issued a decree which obliges all government employees, officials and workers to submit to periodic examination for tuberculosis. Those found to be tuberculous are to receive the leave of absence provided for in an earlier decree, and admission to the large tuberculous hospital "Hospital Nacional Central."

The annual report on the campaign against tuberculosis in Buenos Aires appeared recently. The municipal organization is concerned not only with the hospital and polyclinic treatment, obstetric care for tuberculous women, isolation of the children of tuberculous parents, support of colonies at the seashore and detection of undiscovered cases of tuberculosis but also with the therapeutic, prophylactic and social side of the problem. Although the mortality has been reduced, tuberculosis is still a problem for which neither the available public nor private means are adequate. The number of beds is insufficient to care for all tuberculous patients who are in need of institutional care. According to reports, the five thousand beds available in the tuberculosis hospitals in Buenos Aires and various regions of the country do not meet one third of the requirements.

The sensational press of Buenos Aires has been concerned for months with a new tuberculosis vaccine developed by one Jesús Pueyo. This man is a student aged 40, a Spaniard, who for a time was an assistant at the microbiologic institute. He asserts that he developed a vaccine with curative and prophylactic properties against tuberculosis. The faculty of Buenos Aires was willing to perform an investigation, but Pueyo refused. He demanded that his vaccine be used first for the treatment of human subjects, whereas the investigating commission wanted to begin with an experimental examination. The further course was the following: Pueyo appealed to the minister of the interior, who suggested an examination in the bacteriologic institute of the Departamento Nacional de Higiene with special concessions for Pueyo, but here again Pueyo made impossible demands. Pueyo now attempts further distribution and application of his vaccine, although he knows that legal regulations prohibit this; the president of the Departamento Nacional de Higiene, on the basis of existing laws, has now decreed a fine of 1,000 pesos. The minister of the interior had previously ruled that Pueyo could use his vaccine for scientific research but not for public distribution. The case was discussed also in the Argentine parliament. It was pointed out that the behavior of Pueyo had created an unfavorable impression. The same critical stand was taken by a medical commission appointed by the ministry for public health in Uruguay. On the basis of the available evidence and of former experiences with such preparations, the Pueyo case may be regarded as closed as far as science is concerned.

Campaign Against Trachoma in Argentina

Dr. José A. Cená, chief of the section on trachoma of the Departamento Nacional de Higiene, has issued a report on the campaign against trachoma in Argentina. Trachoma became particularly serious after the eighth decade of the last century. Although in Buenos Aires the spread of trachoma has been so effectively counteracted that the capital is now practically free from it, trachoma is still on the increase in the interior. After extensive observations an investigating committee was appointed in 1923 and a section for the prophylaxis of trachoma and infectious eye diseases was founded at the beginning of 1924 in the Departamento Nacional de Higiene. Dispensaries were opened, but their activity was rather restricted owing to lack of funds. In 1927 the ophthalmologist Prof. Ernst Fuchs made a tour of investigation and ascertained that in spite of expressed doubts the existing disorder was true trachoma. Since 1935 the campaign against trachoma has been intensified and has been carried into the schools; the school children are examined for trachoma and if necessary are treated. Sulfanilamide has recently been used with considerable success for this purpose.

Health Organizations in Paraguay

The health conditions of Paraguay were recently presented in an official report. The organization of public health matters in Paraguay began with the formation of the national hygienic council (Consejo Nacional de Higiene) in 1889. Regulations regarding the practice of medicine have existed since 1900. The national commission for public aid and social welfare was founded in 1915 when the Consejo Nacional de Higiene was converted into the Bureau for public health matters. In 1917 the two were combined under the name Departamento de Higiene y Asistencia Pública. This organization existed until 1936, when the ministry for public health was established. This ministry has five departments: Asistencia Pública in the capital, rural hygiene, hygiene in general, child welfare and dentistry. At the request of the government the ministry was reorganized in 1940 by Dr. Henry Hanson, member of the Oficina Sanitaria Panamericana.

The most important medical problem in Paraguay is infant mortality. To counteract the extreme undernourishment of children, particularly in rural regions, 15 per cent of the rural taxes have been allotted for feeding children in the schools, an arrangement already carried out in eighty localities.

Leprosy is the second important problem. Abdominal typhoid and other forms of typhoid will be more effectively counteracted when Asunción and other large cities have been equipped with proper sewerage systems. Vaccination again typhoid is obligatory for school children. Malaria became a national catastrophe in 1940; fourteen commissions were established, which distributed more than 500,000 quinine tablets and other preparations. About 30,000 patients were treated. Petroleum was used to eradicate the breeding grounds. Ancylostomiasis is likewise widely disseminated. The tuberculosis mortality is relatively high, although it has somewhat decreased in recent years; however, the tuberculosis morbidity has increased.

In the rural hospitals, special departments are to be established for infants. Of 4,700 children in the capital, 4.8 per cent were found to have trachoma.

Brief Reports

The bacteriologic institute of the Departamento Nacional de Higiene in Buenos Aires celebrated its twenty-fifth anniversary in June; since then it has borne the name of its founder, Dr. Carlos J. Malbrán. Several new laboratories were opened at the time of the celebration.

During July a number of Argentinian physicians visited the university of Rio de Janeiro. At the same time Rio de Janeiro had an exhibit of paintings, sculptures and photographs created by Argentinian physicians. A library of Argentinian medical authors, selected by Dr. Juan Ramón Beltrán, professor of history of medicine at the university of Buenos Aires, was presented to Getulio Vargas, the president of Brazil.

The seventh Congreso Nacional de Medicina, which will be held in La Plata in 1943, will have as its subjects rheumatism and arterial hypertension.

James Ewing of New York held conferences on malignant neoplasms at the invitation of the faculty of medicine of Rosario and also in Buenos Aires. From Buenos Aires he went to Santiago, Chile.

Prof. Ernest Carroll Faust, parasitologist of Tulane university, at the invitation of the faculty of medicine of Buenos Aires, recently held a number of conferences on his specialty.

A recent art exhibit in Buenos Aires presented paintings and pieces of sculpture created by physicians.

Deaths

James Norment Baker ✠ Montgomery, Ala.; University of Virginia Department of Medicine, Charlottesville, 1898; secretary of the Alabama State Board of Censors and state health officer; in 1934 elected to the executive committee and in 1936-1937 was president of the Federation of State Medical Boards; was a member of the National Board of Medical Examiners of the United States and a member of the executive committee; since 1930, with the exception of 1934, was a member of the House of Delegates of the American Medical Association and chairman of the Section on Preventive and Industrial Medicine and Public Health, 1932-1933; member of the Southern Surgical Association; past president and secretary of the Medical Association of the State of Alabama; fellow of the American College of Surgeons; as a fellow of the American Public Health Association had an active part in its various activities, having served as chairman of the section on public health officers and as a member of the executive committee and governing council of the association; past president of the Southern Branch, American Public Health Association; past president of the Conference of State and Provincial Health Authorities of North America; served as a major in the medical corps of the United States Army during the World War; in 1940 chairman of the National Malaria Committee; state chairman for Alabama of the Committee on Medical Preparedness of the American Medical Association; aged 65; died, November 9, of coronary occlusion.

Joseph Storer Wheelwright ✠ New York; Cornell University Medical College, New York, 1900; associate in physiology from July 1, 1914 to June 30, 1919 and instructor in surgery from July 1, 1919 to June 30, 1920; fellow of the American College of Surgeons; served during the World War; president of the medical board and chief of the staff of the Southampton (N. Y.) Hospital; member of the board of consultants of the Columbia-Presbyterian Medical Center; secretary of the board of the Doctors Hospital; aged 65; died, October 9, of cerebral hemorrhage while at Long Point, 30 miles southwest of Simcoe, Ont.

Ira Alphonso Darling ✠ Torrance, Pa.; University of Vermont College of Medicine, Burlington, 1911; fellow of the American College of Physicians; member of the American Psychiatric Association; superintendent of the Torrance State Hospital; formerly superintendent of the Warren (Pa.) State Hospital and the Springfield State Hospital, Sykesville, Md.; member of the executive committee of the mental hygiene division, Public Charities Association of Pennsylvania; served during the World War; aged 53; died, October 10, of coronary thrombosis.

Ollie Paxton Board ✠ Birmingham, Ala.; Louisville (Ky.) Medical College, 1903; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; served during the World War; past president of the Jefferson County Medical Society; visiting surgeon, South Highlands Infirmary and the Hillman Hospital; aged 59; was killed, October 15, near Athens, Ohio, in an automobile accident.

George Fordham ✠ Powellton, W. Va.; University of Virginia Department of Medicine, Charlottesville, 1907; fellow of the American College of Physicians; past president of the Fayette County Medical Society; veteran of the Spanish-American and World wars; formerly on the staff of the Morris Memorial Hospital for Crippled Children, Milton; aged 63; died, October 4, of coronary occlusion.

Arthur Bacon Breese, Syracuse, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1881; professor emeritus of clinical gynecology at the Syracuse University College of Medicine; fellow of the American College of Surgeons; surgeon, Memorial Hospital; consulting surgeon, Onondaga General Hospital; aged 83; died, October 13.

Emil Otto Ficke, Davenport, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; served during the World War; formerly county and city physician; for many years physician for the county insanity commission; aged 61; died, October 7, in the Mercy Hospital following an operation on the gallbladder.

William A. D. Dyke, Washington, D. C.; Georgetown University School of Medicine, Washington, D. C., 1929; first lieutenant in the medical corps of the U. S. Army from Dec. 5, 1932 to Jan. 7, 1935; acting assistant surgeon, United States Public Health Service; formerly a lawyer; aged 49; was killed, September 27, in an automobile accident at Tacoma, Wash.

Herbert D. Gardner, Miami, Fla.; Jefferson Medical College of Philadelphia, 1880; past president and secretary of the Lackawanna County (Pa.) Medical Society; at one time coroner of Lackawanna County, Pa.; staff surgeon, Scranton Private Hospital, from 1899 to 1925; staff surgeon, Scranton State Hospital, from 1900 to 1910; aged 85; died, October 13.

Walter Speisser Goodale, Buffalo; University of Buffalo School of Medicine, 1903; member of the Medical Society of the State of New York; professor of hygiene and public health emeritus at his alma mater; superintendent of the Edward J. Meyer Memorial Hospital (Buffalo City Hospital); aged 66; died, October 8, of coronary thrombosis.

James Vane Seids ✠ Cleveland; Western Reserve University School of Medicine, Cleveland, 1920; fellow of the American College of Surgeons; senior clinical instructor in surgery at his alma mater; aged 47; on the staffs of the City Hospital and St. Luke's Hospital, where he died, October 11, of amyotrophic lateral sclerosis.

Ernest Page Fuller, Lawrence, Mass.; University and Bellevue Hospital Medical College, New York, 1899; member of the Massachusetts Medical Society; on the staff of the Lawrence General Hospital; aged 68; died, September 14, of carcinoma of the prostate with metastases to the pelvic bones and left femur.

Henry Thomas Sutton, Zanesville, Ohio; Medical College of Ohio, Cincinnati, 1885; member of the Ohio State Medical Association; fellow of the American College of Surgeons; at one time health officer; aged 79; one of the founders of the Good Samaritan Hospital, where he died, October 1, of pernicious anemia.

George R. Sledge, Parksley, Va.; University of Maryland School of Medicine, Baltimore, 1903; member of the Medical Society of Virginia; also a pharmacist; at one time chairman and member of the county school board; aged 61; died, October 3, in the Lenox Hill Hospital, New York, of coronary thrombosis.

Karl Stanley Simpson, Pittsburgh; Hahnemann Medical College and Hospital of Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; veteran of the Spanish-American and World wars; aged 62; on the staff of the Shadyside Hospital, where he died, October 8, of coronary sclerosis.

Isaac N. Hatfield, Bluffton, Ind.; State University of Iowa College of Medicine, Iowa City, 1884; member of the Indiana State Medical Association; past president and secretary of the Wells County Medical Society; aged 85; died, October 13, in the Wells County Hospital of chronic myocarditis.

Curt Benno Hardt ✠ Woodmere, N. Y.; Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main, Prussia, Germany, 1933; formerly clinical assistant in medicine on the staff of the Hospital for Joint Diseases, New York; aged 32; died, October 16, of pneumonia.

Charles Slater, South Ozone Park, N. Y.; University of Glasgow Medical Faculty, Scotland, 1934; member of the Medical Society of the State of New York; member of the Canadian Army Medical Corps; aged 37; was found dead, October 2, in Toronto, Ont., Canada.

George Arnold Holm, Washington, D. C.; University of Minnesota Medical School, Minneapolis, 1915; member of the Medical Society of the District of Columbia; senior medical officer of St. Elizabeth Hospital; aged 53; died suddenly August 25, of coronary thrombosis.

Andrew Gustavus Sandblad, McKeesport, Pa.; Omaha Medical College, 1894; member of the Medical Society of the State of Pennsylvania; aged 75; on the consulting staff of the McKeesport Hospital, where he died, October 5, of cerebral hemorrhage and arteriosclerosis.

John Charles Frey ✠ Syracuse, N. Y.; Syracuse University College of Medicine, 1920; aged 45; on the staff of the Hospital of the Good Shepherd, Syracuse University, where he died, October 8, of acute appendicitis, pyelophlebitis and streptococcic viridans septicemia.

Henry Norris, Bryn Mawr, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; member of the Medical Society of the State of North Carolina; fellow of the American College of Surgeons; served during the World War; aged 66; died, October 6.

Thomas Ap Roger Jones, Knoxville, Tenn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; member of the Tennessee State Medical Association; served during the World War; aged 74; died, October 9, in the Knoxville General Hospital.

Kenneth M. Kelley, Texarkana, Ark.; Memphis (Tenn.) Hospital Medical College, 1899; formerly county health officer, and mayor; for many years on the staff of the Michael Meagher Hospital; aged 81; died, October 5, of uremia, diabetes mellitus and carcinoma of the larynx.

Jesse M. Shackelford, Martinsville, Va.; Baltimore Medical College, 1891; member and formerly vice president of the West Virginia State Medical Association; physician and owner of a hospital bearing his name; aged 71; died, October 2, of cerebral hemorrhage.

George Abell Russell, Boonville, Mo.; Hahnemann Medical College and Hospital, Chicago, 1888; member of the Missouri State Medical Association; formerly county coroner and county and city health officer; aged 80; died, October 2, of pernicious anemia.

Jack Richard McMichael ✠ Quitman, Ga.; University of the South Medical Department, Sewanee, Tenn., 1907; chairman of the county board of health; formerly member of the state board of health; aged 57; died, October 6, of coronary thrombosis.

Harry T. Harter, Newtonville, Ind.; Louisville (Ky.) Medical College, 1898; member of the Indiana State Medical Association; aged 72; died, October 16, at St. Joseph's Hospital, Lexington, Ky., of adenocarcinoma of the sigmoid with metastases.

Theodor Adolph Tosch, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1911; served during the World War; aged 68; died, September 27, in the Deaconess Hospital of cerebral hemorrhage and hypertension.

Albert Edward Sutton, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1909; served during the World War; on the staff of the Toronto East General Hospital; aged 55; died, October 5, of injuries received when struck by a train.

George Thomas McMurray, Farmingdale, N. Y.; Long Island College Hospital, Brooklyn, 1906; at one time on the staffs of the Hospital of the Holy Family and St. Mary's Hospital, Brooklyn; aged 57; died, October 6.

Le Roy Isaac Walker, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1901; aged 63; on the staff of the Women's Homeopathic Hospital, where he died, September 30, of bronchogenic carcinoma.

Robert Ambrose Joyce, Monroe, N. Y.; Bellevue Hospital Medical College, New York, 1873; at one time surgeon for the fire department of the city of New York; aged 90; died, October 16, of cerebral hemorrhage.

Mary Hadley Smith, Long Beach, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; formerly resident physician at the Willard (N. Y.) State Hospital; aged 85; died, October 8.

John Willis Conley Bowman, Brookhaven, Miss.; Mississippi Medical College, Meridian, 1907; aged 63; died, August 13, in the King's Daughters' Hospital of cerebral thrombosis, arteriosclerosis and hypertension.

Thomas J. Stephenson ✠ Anderson, Ind.; Illinois Medical College, Chicago, 1898; on the staff of St. John's Hickey Memorial Hospital; aged 73; died, October 5, of cerebral hemorrhage and myocarditis.

Frederick Hugh Goddard ✠ Rochester, N. Y.; Western Reserve University Medical Department, Cleveland, 1889; aged 77; died, October 12, in the Highland Hospital of arteriosclerosis and heart disease.

John Voyt Wilson ✠ Pittsburgh; University of Pittsburgh School of Medicine, 1913; aged 53; died, October 2, in the Allegheny General Hospital of hypertension, coronary disease and cholelithiasis.

Nathaniel P. Moss, Roanoke, Va.; Medical Department of Tulane University of Louisiana, New Orleans, 1887; for many years bank president and president of the school board; aged 77; died, October 10.

John Roscoe Steagall, Portland, Ore.; Rush Medical College, Chicago, 1912; served during the World War; aged 63; died, September 25, of coronary thrombosis, sclerosis and angina pectoris.

John William Eustace, Buffalo; University of Buffalo School of Medicine, 1930; member of the Medical Society of the State of New York; aged 36; died, October 11, of coronary thrombosis.

Joseph Hardy, St. Louis; Washington University School of Medicine, St. Louis, 1892; member of the Missouri State Medical Association; aged 80; died, October 14, in St. John's Hospital.

James Poesy Wood, Cedar Grove, Ga.; University of the South Medical Department, Sewanee, Tenn., 1901; member of the Medical Association of Georgia; aged 71; died, September 29.

David Franklin Longenecker, San Diego, Calif.; Jefferson Medical College of Philadelphia, 1876; aged 87; died, October 2, of uremia and prostatic hypertrophy with obstruction.

Alonzo Atchison Cotton, Detroit; State University of Iowa College of Homeopathic Medicine, Iowa City, 1886; aged 79; died, October 7, of uremia, acute nephritis and hypertension.

Allston Moore Willcox, Conway, S. C.; Medical College of the State of South Carolina, Charleston, 1913; served during the World War; aged 53; died in October at Manning.

Kenneth George Theis ✠ Nyack, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1928; aged 40; died, October 16, of malignant hypertension.

Albert B. Hagerthy, Ashland, Maine; Medical School of Maine, Portland, 1903; member of the Maine Medical Association; for many years coroner; aged 62; died in October.

Edward Dwight Chapman, Daytona Beach, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1876; aged 87; died, September 17, of myocarditis.

Jennie A. Sausser Green, Portland, Texas; Woman's Medical College, Chicago, 1890; aged 83; died, October 4, in Winston-Salem, N. C., of cerebral hemorrhage.

Stanley Gordon Herbert, Winnipeg, Man., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1919; aged 46; died, September 28, of asphyxiation.

Josiah B. Keylor, Cochranville, Pa.; College of Physicians and Surgeons, Baltimore, 1885; bank president; aged 83; died, October 17, in the Coatesville (Pa.) Hospital.

Robert Dellen Harper ✠ Loneoak, Ky.; Barnes Medical College, St. Louis, 1902; president of the McCracken County Medical Society; aged 62; died, October 16.

A. J. Odom, Berlin, Ga.; University of Georgia Medical Department, Augusta, 1905; member of the Medical Association of Georgia; aged 64; died, October 6.

Sumner S. Bever, Amazonia, Mo.; Northwestern Medical College, St. Joseph, 1888; formerly county coroner; aged 74; died, October 7, of cerebral hemorrhage.

Maurice Simon Avidan ✠ Newark, N. J.; College of Physicians and Surgeons, Baltimore, 1910; served during the World War; aged 53; died, October 17.

William J. Blackburn, Salem, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1891; aged 79; died, October 5, of carcinoma of the prostate.

A. Frank Lampman, Wilkes-Barre, Pa.; Baltimore Medical College, 1894; aged 68; died, October 10, in the Wilkes-Barre General Hospital of coronary occlusion.

Percival John Abbott, Detroit; Detroit College of Medicine, 1911; aged 58; died, October 7, in the Grace Hospital of intussusception and diffuse peritonitis.

Ora E. Throckmorton, Battle Ground, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1897; aged 74; died, October 4, of paralysis agitans.

Frank George Hope, Sioux City, Iowa; Sioux City College of Medicine, 1906; member of the Iowa State Medical Society; aged 58; died, October 13.

Richard Sawyer Blanchard, Honolulu, Hawaii; Harvard Medical School, Boston, 1940; intern at the Queen's Hospital; aged 28; died, September 27.

Sallie Jones Jagers, Washington, D. C.; Eclectic Medical College of the City of New York, 1887; aged 92; died, October 26, of arteriosclerosis.

Samuel G. Kennedy, Tulsa, Okla.; Kansas City (Mo.) Medical College, 1898; aged 76; died, September 27, of endocarcinoma of the prostate.

James Dean MacDonald, Huntsville, Ont., Canada; Western University Faculty of Medicine, London, 1907; aged 66; died, October 5.

Jacob DeVries, Grand Rapids, Mich.; Physio-Medical College of Indiana, Indianapolis, 1890; aged 77; died, October 7, of mitral regurgitation.

Eckley G. Sharp, Guthrie, Okla.; Eclectic Medical Institute, Cincinnati, 1893; aged 75; died, September 6, of cerebral hemorrhage.

Arsine Arthur Lefebvre, Montreal, Que., Canada; University of Montreal Faculty of Medicine, 1924; aged 43; died, September 4.

James Alexander Phillips, Brantford, Ont., Canada; Trinity Medical College, Toronto, 1887; aged 75; died, September 4.

Rozell Berryman, Baltimore; Baltimore Medical College, 1893; aged 80; died, October 1, of carcinoma of the stomach.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Activanad.—Charles J Ahsbahs, trading as Neo-Products Company of America, New York, promised the Federal Trade Commission in December 1940 to discontinue certain misrepresentations in the sale of this product. Among them were that the thing is praised or recommended by eminent physicians or psychiatrists; that it strengthens the body or benefits persons afflicted with fear, anxiety, irritability, worry or fatigue; that it prevents chronic disorders or has any therapeutic value in the prevention of any ailment or disease; that it builds up the body, promotes formation of new blood, strengthens the muscles, promotes sleep, acts as an effective aphrodisiac, or does some other things. In the same month Lester Meyers, New York, who conducts an agency which handles the "Activanad" advertising, also promised the Commission that he would discontinue these misrepresentations.

Beauty Builder and Beauty Fount.—These are vapor-electric bath cabinets put out by the Gellman Manufacturing Company, Rock Island, Ill. In December 1940 the concern signed a stipulation with the Federal Trade Commission promising to cease representing that these cabinets have a direct value in permanent reduction of weight; that by means of vapor heat or infra-red or ultraviolet rays these devices help eliminate excess fat, that they rid the body of harmful toxins or "cure" or "banish" or "erase" fatigue or benefit nervous or underweight persons.

Darmela Products.—These include "Darmela Salve" and "Darmela Liquid" and are put out by Joseph H. Miller, trading as Darmela Laboratory, Chicago. In November 1940 the Federal Trade Commission reported that it had got him to agree to cease representing that either of his products is a competent treatment or effective remedy for open or running wounds or sores (cutaneous ulcers) unless it is explained in direct connection therewith that they will have no effect on the condition when it is due to varicose veins, tuberculosis or syphilis; that either is a competent treatment for shingles, except possibly for relief of the pain and itching; that Darmela Liquid is a competent treatment for stiffness, numbness, paralytic stress and some other conditions, except as it may give temporary relief from pain or discomfort associated with those conditions. Miller also promised to cease representing that the liquid is effective for coughs or colds or that he owns, controls or operates a laboratory.

Digesto-Pep and Coldlax.—Smith Brothers Drug Company of Greensboro, N. C., signed a stipulation with the Federal Trade Commission in December 1940 promising to discontinue certain misrepresentations in the sale of these two products. Among them were that "Digesto-Pep" is a remedy for stomach disorders or will do more than temporarily relieve stomach discomforts associated with gastric hyperacidity, or enable a person to eat whatever he wishes without discomfort; or that "Coldlax" will attack a cold at the seat of the trouble or do anything more than temporarily relieve its symptoms.

Entromul.—This was represented in the advertising to be valuable in the treatment of various stomach and intestinal disturbances, particularly those due to excess acid, putrefactive germs in the intestine or simple mucous colitis. In December 1940 Thomas J. McBride, trading as the Entromul Company of Los Angeles, promised the Federal Trade Commission that he would discontinue these misrepresentations. The stipulation that he signed was supplemental to one accepted by the Commission in February 1937, the terms of which were still in effect. Following up his stipulation in December 1940, the N. J. Newman Advertising Agency of Los Angeles signed a similar one, promising to discontinue the misrepresentations mentioned.

F. K. Invisible Nasal Filter.—This was represented by the F. Koehler Manufacturing Company, Inc., of Newport, Ky., as competent to relieve the discomforts of hay fever, rose fever, sinus infections and asthma, protect the nasal passages from pollen and give effective relief for headaches caused by gasoline fumes or for coughing or a phlegm-filled throat condition caused by asthma or sinus infection. In November 1940 the Koehler concern promised the Federal Trade Commission that it would discontinue these misrepresentations.

House of Westmore Cosmetics.—These are put out by a Perce H. Westmore and the House of Westmore, Inc., Burbank, Calif. In November 1940 this person promised the Federal Trade Commission that he would cease representing that cosmetics in general contain undesirable or unflattering colors which may give a harsh or aged appearance, whereas the House of Westmore cosmetics have had the color filtered out of them.

Nix Deodorant Cream.—This was put out by one P. Edwards, trading as the Nix Cosmetics Company, Memphis, Tenn. In December 1940 he signed a stipulation with the Federal Trade Commission to cease representing that his cream stops the flow of perspiration or its odor for days; that it affects these conditions in a new way or neutralizes or has any other substantial effect on perspiration acids. In January 1941 Cole and Company of Memphis, which handles the Nix advertising, signed a similar stipulation with the Commission.

Ofria.—This product, also known as L'Unguento Ofria, Ofria Pile Remedy and Ofria Ointment, was put out by one Maria Ofria of Brooklyn, trading under the name of Philip Ofria. In November 1940 the Federal Trade Commission reported that it had got her to sign a stipulation promising to cease representing that her product will cure or dry up hemorrhoids, pruritus and similar troubles or that it will afford lasting relief. She also agreed to cease using the word "remedy" in the trade name of this product or any other mixture of similar composition.

Peano-Oil.—This was put out by six co-partners who traded as the Peanut Products Company, Tuskegee, Ala. In November 1940 the Federal Trade Commission reported that it had got these persons to agree to cease representing that the use of their product will result in healthy hair, will restore the natural oil of the hair, will prevent hair from falling out or becoming brittle or prevent baldness; or that it nourishes the scalp or that it is the discovery of an eminent scientist.

Pilot Health Course.—This was exploited by a Charles B. McFerrin, Orlando, Fla., who also published the *Spot Light Magazine*. McFerrin for years has represented himself as a "diet specialist." In November 1940 the Federal Trade Commission got him to sign a stipulation agreeing to cease from representing that his magazine contains information of any value whatever for any disease or affliction, including gallbladder trouble, liver disorders, rheumatism, anemia and other ailments; or that "The Pilot Health Course" offers any conceivable benefit to sinus trouble, bronchitis, asthma and some twenty-five other disorders, or enables one to have health, prosperity or happiness.

Pow-A-Tan Herb Tonic.—The Pow-A-Tan Medicine Company, Huntington, W. Va., put this out under the misrepresentations that it was a cure or remedy or competent treatment for all common ailments, such as rheumatism, neuritis, arthritis, indigestion, hemorrhoids, la grippe, lumbago and similar complaints. In November 1940 the concern stipulated with the Federal Trade Commission that it would discontinue these misrepresentations and a few others.

Q-Loid.—The Magay Corporation of New York, in January 1941, stipulated with the Federal Trade Commission that it would cease representing that "Q-Loid" would accomplish results similar to those obtained by injections of colloidal sulfur or that it was an effective remedy for arthritis beyond furnishing temporary symptomatic relief in some forms of arthritis when there is a sulfur deficiency. In 1938 government chemists reported that Q-Loid consisted of white tablets and yellow ones, the first containing 5 grains (0.3 Gm.) of acetylsalicylic acid per tablet and the second, sulfur (from 0.2 to 0.4 grain [0.013 to 0.026 Gm.]) and antipyrine (0.2 to 0.3 grain [0.04 Gm.]) per tablet. At that time the government declared that Q-Loid was fraudulently represented as a remedy for arthritis, rheumatism and allied conditions.

Ramstead Treatment.—The Ramstead Company, Inc., Milwaukee, having promoted this product as a competent treatment for stomach ailments generally, whose use would enable a person to tolerate all kinds and types of foods and would act as a substitute for surgical treatment of gastric ulcers, signed a stipulation with the Federal Trade Commission in November 1940 promising to discontinue these and other misrepresentations. The stipulation was supplementary to one that the same company had made with the Commission in February 1932.

Rose Laird Cosmetics.—These were put out by a Rose Helen Kingstone, trading as R. H. Laird Company and Rose Laird, New York, who in December 1940 promised the Federal Trade Commission to discontinue certain misrepresentations in her advertising. Among these were that "Rose Laird's Greaseless Lubricant, Protective Face Lotion, Overnight Cream, and Liquid Facial Soap" alone or in combination would correct blemishes or other cutaneous ills or enable one to acquire or retain a clear skin; or that by use of the product one would not have a bumpy skin, excess oil, eruptions, coarse pores or blackheads. In January 1941 similar promises were made to the Commission by AW-Advertising, Inc., of New York.

Stuart's Tablets.—Apparently this is the product that used to be sold as "Stuart's Dyspepsia Tablets." In December 1940 the F. A. Stuart Company, Marshall, Mich., and Benson & Dall, Inc., Chicago, an advertising agency, promised the Federal Trade Commission to cease representing that these tablets are a remedy for any dysfunction of the stomach, or more efficacious as an antacid than any similar preparations, have any other action on the stomach than temporary relief of acidity or prevent the occurrence of any dysfunction of the stomach.

Vapo-Cresolene.—In November 1940 the Federal Trade Commission announced that it had got the Vapo-Cresolene Company, Chatham, N. J., to sign a stipulation to discontinue certain misrepresentations in its advertising of this product. Among these were that Vapo-Cresolene is a competent treatment for colds or a remedy for spasmodic or ordinary croup, whooping cough, "children's diseases," pneumonia, influenza or deep chest colds.

Wonder Glo.—Werner Walter, trading as Wonder Products Company, Canton, Ohio, promised the Federal Trade Commission in August 1940 that he would discontinue representing that this alleged cleaner and water softener, put out also as a shampoo, has any particular value when used as a shampoo aside from its power to soften hard water.

Correspondence

HYPERSENSITIVITY TO SULFATHIAZOLE

To the Editor:—In THE JOURNAL, October 18, page 1378, under correspondence, Dr. Merritt H. Stiles calls attention to what he considers an omission in the table appearing in the article by Dr. E. P. Lieberthal and me (Pemphigus Foliaceus-like Eruption Following Use of Sulfanilamide and Sulfapyridine, THE JOURNAL, September 6, p. 850). This table, which was presented by Dr. Perrin Long as a summary of the clinical toxic manifestations of sulfanilamide, sulfapyridine and sulfathiazole was, in my estimation, a superlative tabulation of information up to the time the table was presented by Dr. Long before the Pan American Scientific Congress on May 15, 1940. The status of sulfanilamide, its related drugs and their toxic manifestations is still in a state of flux, as revealed by the great number of contributions to the literature listed in recent editions of the *Quarterly Cumulative Index* dealing with the various phases of the clinical application of these drugs and their toxic sequelae. In the table it is stated that nausea and vomiting following sulfathiazole is rare, and it is my feeling that Dr. Stiles's communication referring to his article in the *Pennsylvania Medical Journal* is simply further corroboration of this statement in Dr. Long's table.

MAX S. WIEN, M.D., Chicago.

MARRIAGE IN EPILEPSY

To the Editor:—I realize that answers to the questions propounded in Queries and Minor Notes must be brief, but a half answer may be worse than none. This is the case in the answer to "Marriage in Epilepsy" on page 1402 of the issue of October 18. Largely on the basis of the electroencephalographic evidence which my associates and I have gathered, the writer states that the only hope of eliminating epilepsy is by birth control among epileptic adults. He overlooks the fact that the brain wave studies indicate that for every epileptic patient there are probably twenty or more nonepileptic patients who nevertheless are carriers of this or an allied disorder. Therefore, childlessness of all persons with epilepsy would eliminate only 5 per cent of epilepsy. Prohibitions applied to a person with epilepsy apply with equal force to one half of his relatives and to something like 10 per cent of the whole population. Again, the probability of having affected progeny depends in part on whether the person whom the epileptic person marries carries a predisposition to epilepsy. The marriage of two normal carriers of this disorder is more dangerous than the marriage of an epileptic person to a noncarrier. Logically brain wave tracings of both partners to a marriage should be secured if the physician is to offer specific advice to an individual. Even so he should consider the possibility suggested by unpublished observations that unusual, so-called "abnormal" frequency of waves may be associated with high attainment or genius. Many implications of electroencephalography are as yet unexplored.

This technic is not yet available for most epileptic persons who may wish to marry. However, the degree of inheritance of epilepsy is greater in some individuals than in others, and there is certain statistical evidence which makes the outlook relatively favorable for the patient whose history is given: her family history is unmarred, her mentality is normal, and seizures began relatively late in life. Futhermore, her other physical and mental characteristics, which presumably are also transmittable, are socially desirable. If she will select a mate whose family and personal history are as clear as her own, there is less than one chance in twenty that one of her two children, if she has but two, will have epilepsy. Whether she wishes to take this chance is something she, and not her doctor, will need to decide.

The correspondent asked for references. The latest summing up of evidence will be found in the article on the inheritance of cerebral dysrhythmia and epilepsy in the *Archives of Neurology and Psychiatry* **44**:1155 (Dec.) 1940 and in Erickson, Theodore, and Penfield, Wilder: Epilepsy and Cerebral Localization, Springfield, Ill., Charles C. Thomas, 1941, and in Lennox, W. G.: New Light on Epilepsy and Migraine, New York, Harper Brothers, 1941.

Incidentally, the correspondent is giving too small a dose of phenobarbital and there would seem to be no indication for the use of hormones.

WILLIAM G. LENNOX, M.D., Boston.

MERCUPURIN

To the Editor:—During the past six years each of us has administered a large number of doses of mercupurin to patients with congestive heart failure without any serious toxic reactions. Therefore we were startled on learning that we had independently within the last two months observed three deaths following an intravenous injection of the drug. On further inquiry we found that others of our acquaintance had recently observed extremely serious and even fatal reactions following promptly after the injection of mercupurin. Since the technic had been the same as that used by us in giving several thousand injections of mercupurin, we are at a loss for an adequate explanation of these recent reactions. Tyson (THE JOURNAL, September 20, p. 998) reported dangerous reactions after the injection of mercurials in cases of nephrosis; none of the fatal or nonfatal reactions noted by us occurred in patients with this malady.

Since no postmortem examination was made, we will not attempt to give complete reports of the cases. Briefly, the patients all suffered from congestive heart failure, one of syphilitic, another of hypertensive and the last of arteriosclerotic origin. All had received mercupurin previously. The last dose in each case was 2 cc. The drug was given slowly by vein. Death in each case was immediate.

If more such deaths have been occurring recently it would be well to have the subject of mercurials reexamined. It is for this reason that we are bringing our experiences to your attention at this time. We suggest that until further investigation mercupurin be given intramuscularly. The diuresis following intramuscular injection is usually satisfactory.

LOUIS FRIEDFELD, M.D. WALTER MODELL, M.D.
MILTON KISSIN, M.D. RALPH SUSSMAN, M.D.
New York.

BILATERAL THROMBOSIS OF ANTERIOR CEREBRAL ARTERY

To the Editor:—In THE JOURNAL, September 27, Judah Marmor and M. R. Sapirstein reported a case of "Bilateral Thrombosis of Anterior Cerebral Artery Following Stimulation of a Hyperactive Carotid Sinus."

The authors gave the blood count of this patient as hemoglobin 114 per cent, red cells 6,100,000 and leukocytes 14,000 with a normal differential. The hematocrit test, however, was within normal limits.

They conclude that "the slowing of the pulse and the fall in blood pressure produced by stimulation of the carotid sinus was a contributory factor in prematurely precipitating the cerebral thrombosis . . . in elderly persons with evidence of advanced arteriosclerosis, cerebral as well as myocardial. It may well be that carotid sinus stimulation is not entirely without danger in such persons."

While their conclusion is logical, I think that they should also have stressed the probability of the polycythemia, although not vera, having been a predisposing factor for the thrombosis in this case. It would seem advisable then that in elderly patients with polycythemia stimulation of the carotid sinus should be performed with caution.

L. FELDMAN, M.D., Chicago.

NOTE.—This letter was referred to the authors, who reply:

To the Editor:—In the writing of our report Dr. Sapirstein and I had seriously weighed the question of whether or not the polycythemia had been a significant predisposing factor for the thrombosis and after thorough consideration had come to the conclusion that it had not. Our opinion was based chiefly on the fact that the hematocrit test was within normal limits, which is not the case in true polycythemia. This seemed to indicate that we were dealing merely with a high normal blood count of no particular pathogenic significance, and we concluded, therefore, that the advanced cerebral arteriosclerosis was the important predisposing factor in our case.

Nevertheless, we would agree that the statement expressed by your correspondent is a valid one, namely that "in elderly persons with polycythemia, carotid sinus stimulation should be performed with caution." We would carry the concept even further, however, and state that in any person in whom there is a predisposition to thrombus formation, for whatever reason, carotid sinus stimulation should be performed with caution.

JUDAH MARMOR, M.D., New York.

OXYGEN TENT THERAPY IN THE TREATMENT OF ECLAMPSIA

To the Editor:—Under the title "Oxygen Tent Therapy in the Treatment of Eclampsia" Dr. Roy E. Nicodemus published his impression that continuous oxygen therapy, combined with the Stroganoff treatment, played a major part in the recovery of a number of his patients with eclampsia. He states that in a careful perusal of the literature on the treatment of eclampsia he could find no reference to the use of oxygen other than the early writings of Stroganoff and De Lee on oxygen inhalations instituted immediately after convulsive seizures (THE JOURNAL, October 11, p. 1238). This rediscovery of oxygen as an important adjunct in the treatment of eclampsia is fascinating. A good thing bears repeating. In 1912 investigation concerning certain chemical aspects of autolysis of the liver revealed that the administration of oxygen significantly retarded this phenomenon. It was this observation that served as an impetus to incorporate oxygen administration as a routine in the treatment of eclampsia and severe preeclampsia in which acute degeneration of the liver so frequently occurs (Hofbauer, J. I.: *Jahresk. f. ärztl. Fortbild.* **7**:22, 1912). By the same token the administration of chloroform to eclamptic patients, because of its hepatotoxic effect, was strongly deprecated. This view was further elaborated in an address entitled "Recent Advances in the Treatment of Eclampsia Gravidarum." In a survey of certain concrete conditions concerning anoxemia incident to the disorder, it was emphasized that "inhibition of the oxidative processes in eclamptics affords a biochemical basis for the institution of a liberal administration of oxygen to such patients, as recommended by us years ago" (*Am. J. Obst. & Gynec.* **26**:311 [Sept.] 1933).

For the rational treatment of preeclampsia and eclampsia a full understanding of the causation and nature of the disorder is the prime prerequisite. Conquest of the etiology of eclampsia has for decades been regarded the supreme task and achievement in obstetrics. Today it is acknowledged that heretofore the magnificient efforts to unravel the problem have resulted in confessed futility. Recent unavailing attempts to revive the long discredited theory of anaphylaxis or the "pressure theory" signify the present chaotic state of reasoning and confusion as to the pathogenesis and etiology of the toxemia of pregnancy. The jungle of theories will not be cleared until the fundamental facts are mastered.

Using facts, not theories, a forthcoming paper (*West. J. Surg., Gynec. & Obst.*, November 1941) makes an outright bid for arrival at the threshold of certain fundamentals of the etiology of preeclampsia. In accord with Irving, Soma Weiss and others who placed stress on functional disturbances of the arterioles and capillaries as probably holding the key to much of the mystery, the signs and symptoms of "this vascular syndrome of pregnancy" (Weiss) as well as the multiple bodily changes occurring in the disorder are there interpreted in terms of deranged vascular physiology, which pivots on the interaction of three pharmacologically well defined principles—histamine, pitressin, acetylcholine—during gestation. While pitressin and acetylcholine are normal constituents of pregnancy, the first named occurs only in toxemia. This study serves to bring to a realization and conclusion, for the time being, previous investigations quoted in the text. Deviation from current thought is particularly apparent in my consideration of biologic placental insufficiency—reflected anatomically in the well known occurrence of multiple infarcts, hemorrhage and areas of autolysis in the toxemic placenta which reduce its ability to store acetylcholine, estrin and progesterone—as a determining etiologic factor in preeclampsia. This is at sharp variance with the view generally held that certain hitherto undefined products of placental decomposition constitute a basic essential in the pathogenesis of the late toxemia. The attempted coordination, in my paper, of the facts presented is too challenging to be passed over. If examined dispassionately and graciously received, the basic arguments advanced may serve to waive the doctrine that the etiology of the toxemia of pregnancy is utterly obscure. "Let there be light."

J. I. HOFBAUER, M.D., Cincinnati.

NUTRITION

To the Editor:—Dr. Philip R. Trommer (THE JOURNAL, October 11, p. 1283) will do well to check some of his own premises before impugning the opinion of Dr. Logan Clendening with whose timely comment as to the factual dearth of clinical hypovitaminoses I heartily agree. In the dermatologic section of the outpatient clinic from which Dr. Clendening's patients also were drawn, I see extremely little evidence of pellagra, although a dermatologic eye at least intends to be acute to such symptoms. A diet of "6 to 8 cups of coffee a day together with 2 to 3 packs of cigarets" is, incidentally, quite a reliable symptom of hypothyroidism, which is more likely to be the basic cause of "anorexia and loss of weight" than the patient's selection of ingesta. Hypothyroidism is also a cause, frequently enough, of malmetabolism of vitamins, especially of vitamin A. Perhaps with a normal complement of thyroxin some persons would not stay on relief.

RICHARD L. SUTTON JR., M.D., Kansas City, Mo.

RAT BITE FEVER

To the Editor:—In perusing THE JOURNAL of May 24, page 2393, I saw the report of Dr. John Greenwood and Dr. Edmond R. Hess of rat bite fever in an infant aged 11 days. I was once awakened from my sleep within three hours after an infant was born by its crying; I saw a rat biting the child's toe. Following this rat bite the child had rat bite fever.

G. A. BYERS, M.D., North Bend, Neb.

Council on Medical Education and Hospitals

REPORT OF MEETING OF THE COUNCIL

At a meeting of the Council on Medical Education and Hospitals held in Chicago on Nov. 2, 1941 the following business was transacted:

1. *Resolved*, That the minutes of the business meetings held on May 31 and June 3, 1941 be approved.

2. Appreciation regarding the work of Dr. Arthur R. Bowles:

The members of the Council on Medical Education and Hospitals record with deep sorrow and regret the death of Dr. Arthur R. Bowles on Sept. 3, 1941.

As hospital inspector since October 1939 he served the Council with unusual fidelity and discretion, while his ability and understanding won for him the respect and confidence not only of the officers of the American Medical Association and of the Council but of all those with whom he came in contact in his work. His analysis and appraisal of the internship was an outstanding contribution of which the value will be recognized for many years.

3. Dr. J. R. Harris, Foreman, Ark., newly appointed inspector on the hospital staff of the Council, was presented to the members of the Council.

4. The question of medical preparedness as related to medical education, including the intensification of the medical curriculum, increase in enrolment, shortage of interns and residents, priorities and allied subjects, was considered at length. Dr. Olin West and Dr. Morris Fishbein participated in the discussion.

The Council expressed itself as being ready for an emergency meeting at any time if any of these problems become pressing.

With regard to the shortage of interns and residents, the Council was of the opinion that no recommendation could be generally applicable and, therefore, each hospital is in best position to deal with its own problem.

It was agreed that at an early date the secretary plan a joint conference of the Council and the newly created Procurement and Assignment Service for Physicians, Dentists and Veterinarians, which is a part of the Office of Defense, Health and Welfare Services under the direction of Mr. Paul V. McNutt.

5. Dr. Reginald Fitz's study on intern health has been completed, read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Second Annual Session of the American Medical Association in Cleveland on June 5, 1941 and published in THE JOURNAL of Sept. 27, 1941 under the title "Concerning Interns and Their Health." Reprints have been prepared for distribution.

6. With regard to the enrolment of foreign medical students who are willing to repeat one or two years in an American medical school in order to obtain a degree, the Council was of the opinion that this is primarily a function of the medical school. The Council would suggest, however, that the heads of the departments determine the acceptability of such applicants by requiring them to pass an examination in those subjects for which they desire credit.

7. The customary lists of hospitals and other institutions for registration, approval or other action were approved.

WILLIAM D. CUTTER, M.D., Secretary.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

MEDICAL CORPS, UNITED STATES NAVY

Examination. Assistant Surgeon with the permanent rank of Lieutenant (junior grade) and Acting Assistant Surgeon with the probationary rank of Lieutenant (junior grade), Jan. 5-9. Examination will be held at the Naval Hospitals at Chelsea, Mass., Newport, R. I., Brooklyn, Philadelphia, Norfolk, Va., Charleston, S. C., Pensacola, Fla., Corpus Christi, Tex., San Diego and Mare Island, Calif., Puget Sound, Wash., Great Lakes, Ill., Pearl Harbor, T. H., and Naval Medical Center, Washington, D. C. Apply Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, November 15, page 1729.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Board of Medical Examiners, Montgomery.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, Dec. 10. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO: * *Endorsement.* Denver, Jan. 6. *Examination.* Denver, Jan. 7-9. Applications must be on file not later than Dec. 22. Sec., Dr. George R. Buck, 831 Republic Bldg., Denver.

CONNECTICUT: * *Endorsement.* Hartford, Nov. 25. Sec., Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, Nov. 24-25. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Jan. 12-15. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Topeka, Dec. 9-10. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 8-10. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Medical.* Baltimore, Dec. 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 9-10. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: * Ann Arbor and Detroit, June 10-12. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Jan. 20-22. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

NEW HAMPSHIRE: Concord, March 12-13. Sec., Dr. T. P. Burroughs, Board of Registration in Medicine, State House, Concord.

NEW JERSEY: Trenton, June 16-17. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NORTH CAROLINA: *Endorsement.* December. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Columbus, Dec. 2-4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * *Reciprocity.* Oklahoma City, Dec. 10. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Dec. 9-10 and Portland, January 21-23. Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Acting Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND:* Providence, Jan. 8-9. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: * Pierre, Jan. 13-14. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TENNESSEE: Memphis, Dec. 17-20. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

UTAH: *Endorsement.* Salt Lake City, Dec. 5. Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: * Madison, Jan. 13-15. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Feb. 2-3. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Dec. 16. Sec., Mr. Franklin E. Roach, Science Hall, University of Arizona, Tucson.

COLORADO: Denver, Dec. 10-11. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: Washington, April 20-21. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 E. Municipal Bldg., Washington.

IOWA: Des Moines, Jan. 13. Dir., Division of Licensure and Registration, State Department of Health, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: February 13-14. Sec., Miss Flora E. Dube, East Lansing.

MINNESOTA: Minneapolis, Jan. 6-7. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Omaha, Jan. 13-14. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

SOUTH DAKOTA: Aberdeen, Dec. 5-6. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Milwaukee, Dec. 6. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Oklahoma June Report

The Oklahoma State Board of Medical Examiners reports the written examination for medical licensure held at Oklahoma City, June 11-12, 1941. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Fifty-four candidates were examined, all of whom passed. The following schools were represented:

School	PASSED Year Grad.	Number Passed
University of Arkansas School of Medicine	(1937)	1
Washington University School of Medicine	(1937)	1
Columbia University College of Physicians and Surgeons	(1939)	1
Univ. of Oklahoma School of Medicine	(1940),* (1941, 50)*	51

* Licenses have not been issued.

Rhode Island October Report

The Rhode Island Board of Examiners in Medicine reports the written examination for medical licensure held at Providence, Oct. 2-3, 1941. The examination covered 9 subjects and included 82 questions. An average of 80 per cent was required to pass. Three candidates were examined, all of whom passed. Three physicians were licensed to practice medicine on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Loyola University School of Medicine		(1933)	1
Tufts College Medical School		(1940)	1
Jefferson Medical College of Philadelphia		(1939)	1

School	LICENSED BY ENDORSEMENT	Year Grad.
Boston University School of Medicine		(1936)
Harvard Medical School		(1938)
Tufts College Medical School		(1939)

Kansas September Report

The Kansas State Board of Medical Registration and Examination reports the written examination for medical licensure held at Kansas City, Sept. 23-24, 1941. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fourteen candidates were examined, all of whom passed. Nine physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Kansas School of Medicine		(1941, 12)	12
St. Louis University School of Medicine		(1940)	1
University of Tennessee College of Medicine		(1941)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1922)	Illinois
University of Louisville School of Medicine		(1931), (1940)	Kentucky
Tulane University of Louisiana School of Medicine		(1935)	Louisiana
University of Michigan Medical School		(1935)	Michigan
Creighton University School of Medicine		(1939)	California
University of Cincinnati College of Medicine		(1940)	Ohio
University of Tennessee College of Medicine		(1927)	Tennessee
McGill University Faculty of Medicine		(1933)	California

Tennessee June Report

The Tennessee State Board of Medical Examiners reports the written examination for medical licensure held at Knoxville, Memphis and Nashville, June 16-17, 1941. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and thirty-eight candidates were examined, 137 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine		(1939)	1
Howard University College of Medicine		(1940, 2)	2
Jefferson Medical College of Philadelphia		(1932)	1
University of Pennsylvania School of Medicine		(1941)	1
Meharry Medical College		(1940), (1941, 47)	48
Univ. of Tennessee College of Medicine		(1940, 2), (1941, 30)	32
Vanderbilt University School of Medicine		(1941, 52)	52

School	FAILED	Year Grad.
University of Tennessee College of Medicine		(1941)

Eighteen physicians were licensed to practice medicine by endorsement from June 5 through August 21. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine		(1940)	Arkansas
College of Medical Evangelists		(1938)	N. B. M. Ex.
University of Georgia School of Medicine		(1940)	Georgia
Johns Hopkins University School of Medicine		(1934)	Maryland
University of Michigan Medical School		(1936)	Michigan
Wayne University College of Medicine		(1940)	Michigan
Washington University School of Medicine		(1939)	Missouri
New York Medical College, Flower and Fifth Avenue Hospitals		(1939)	N.B. M. Ex.
Duke University School of Medicine		(1939)	N. B. M. Ex.
Western Reserve University School of Medicine		(1939)	Ohio
Universtiy of Oklahoma School of Medicine		(1934)	Oklahoma
Jefferson Medical College of Philadelphia		(1924)	S. Carolina,
(1938) Pennsylvania			
University of Pennsylvania School of Medicine		(1900)	Indiana
(1938) New York			
Medical College of the State of South Carolina		(1939)	S. Carolina
University of Tennessee College of Medicine		(1931)	W. Virginia
Medical College of Virginia		(1903)	Virginia

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: "Conceded Eminence and Authority" in the Profession as Basis for Licensure Without Examination.—Marburg was licensed to practice medicine in Austria in 1899 and practiced there until 1938, becoming, in the words of some American physicians who certified as to his eminence when he sought a license to practice in New York, "the leading neuropathologist in Europe." In 1938 he immigrated to the United States and subsequently filed a declaration of intention to become a citizen. He was appointed clinical professor of neurology at Columbia University College of Physicians and Surgeons and research neuropathologist at Montefiore Hospital, New York City. He sought a license to practice medicine in New York State without examination by virtue of section 1259 of the Education Law, which authorizes the commissioner of education in his discretion on the approval of the board of regents, in effect, to license without examination a physician licensed by another state, or country, provided the applicant possesses the preliminary and professional qualifications required of an applicant for licensure after examination, has been in reputable practice for ten years or more and has reached a position of conceded eminence and authority in his profession. The commissioner and the board of regents denied the application and Marburg instituted a proceeding to require the approval of his application. The trial court entered such an order and the order was affirmed on appeal by the supreme court, appellate division, third department, New York. (*Marburg* v. *Cole*, 23 N. Y. S. [2d] 501). The commissioner and the board then appealed to the Court of Appeals of New York.

The sole question presented for the determination of the Court of Appeals was whether or not the refusal to grant Marburg's application was so arbitrary, capricious or unreasonable as to constitute an abuse of the discretion conferred on the commissioner and the board by section 1259 of the Education Law, referred to. That statute, said the Court of Appeals, expressly invests the commissioner of education and the board of regents with a wide discretion, the due exercise of which the courts do not have the power to disturb. Nor do the courts have the power to substitute their judgment for the judgment of the properly delegated administrative officials. Thus in the absence of clear and convincing proof that the discretion has been exercised arbitrarily, unfairly or capriciously, the courts will not interfere. The commissioner and the board have exercised with great caution the broad discretion conferred on them by section 1259 to license eminent men, licensing only four persons under this section since it was enacted in 1918. Each person so singularly honored had attained prior to such licensure a position of eminence and authority in the medical profession. One of the physicians so honored had discovered the Schick test for determining susceptibility to diphtheria. Another physician had been the recipient in 1934 of the Nobel prize in medicine and was the co-discoverer of the cause and cure for pernicious anemia. Another physician had been the originator of the so-called insulin shock treatment for dementia precox or schizophrenia. The fourth physician so licensed had previously been a full professor of gynecology and obstetrics at the University of Toronto Faculty of Medicine and had been called to a full professorship of gynecology and obstetrics by the Columbia University College of Physicians and Surgeons and to the directorship of the Sloane Hospital for Women. Apparently, the board in exercising its broad discretion in determining what constituted "a position of conceded eminence and authority" in the profession had adopted a rigid objective test that the eminence required by the statute is obtained only by an outstanding original contribution in some one field of medicine. They departed from this objective standard in permitting the licensure of the last physician referred to, but in view of his appointments the board concluded that they could, within their discretion, make such an exception since they were satisfied that that physician ranked among the few outstanding men in his profession as evidenced by universal recognition and outstanding appointments in New York State. In the case at

bar, said the Court of Appeals, after full hearings the commissioner and the board have come to the determination that the eminence of Dr. Marburg does not satisfy the standard required by the statute as it has been interpreted by them in the past. It is this determination that the Court is asked to declare to be arbitrary, unfair and capricious, but the Court does not believe that such is the case. It is not claimed by Marburg, nor does the record show, that he is responsible for any outstanding original contribution to any field of medicine. Thus if the eminence of Marburg is in any way to satisfy the high degree of eminence which has been set as the prerequisite for the indorsement of a medical license under this section it must be shown that his eminence in the field of neurology is so great that it can be said to be arbitrary, unfair or capricious for the commissioner and the board to have refused to make an exception to the general standard in his case. While the evidence with respect to Marburg's reputation and his accomplishments is impressive, it did not, in the opinion of the Court, require the board and the commissioner to make an exception to their general standard in Marburg's case nor as a matter of law render their refusal to do so arbitrary, unfair or capricious.

Marburg did not allege, nor was there any evidence to support a claim, that the standard which had been adopted by the commissioner and by the board with respect to license by virtue of section 1259 was arbitrary or unreasonable. The law, said the Court, is well settled that it is not always necessary that license legislation prescribe a specific rule of action. Where it is difficult or impracticable for the legislature to lay down a definite, comprehensive rule, a reasonable amount of discretion may be delegated to the administrative officials. Where the administrative agency has adopted a standard as an interpretation of the broad powers granted to it by the statute, the Court may declare such a standard invalid only in the event that it is so lacking in reason for its promulgation that it is essentially arbitrary. In concluding that the interpretation adopted by the commissioner and the board of the powers confided to them by the legislature through the provisions of the section in question is not unreasonable, the Court adverted to the liberality accorded by New York State to practitioners of other states who have been licensed in the past by virtue of other sections of the medical practice act. The Court quoted figures as to the number of such applicants who have been granted licenses in New York, from which it appeared that of the 1,054 graduates of foreign medical schools admitted to practice medicine in New York after examination in 1939 and 1940, the vast majority were persons who were born in foreign countries and came to this country during the last several years. Thus in the case at bar, where the board of regents has interpreted the words "conceded eminence and authority in his profession" to mean an outstanding original contribution to a certain field of medicine or standing among the first few men of his profession, as evidenced by universal recognition and outstanding appointments to positions of high responsibility in the state, such interpretation cannot be said as a matter of law to be unreasonable or arbitrary.

Since success in this proceeding required the petitioner to establish a clear legal right to the remedy he chose and since it appeared that the power granted to the commissioner and to the board under section 1259 is more a power to confer a privilege and does not create an absolute right in an applicant, no order to compel the exercise of the power will lie except where the refusal is arbitrary, unfair or capricious. There being no evidence to sustain such a finding, the Court reversed the action of the court below requiring the issuance of a license to Marburg.—*Marburg v. Cole, 36 N. E. (2d) 113 (N. Y., 1941).*

Optometry Practice Acts: Illegality of Activities of Licensed Physician Employed by Jewelry Store to Practice Optometry.—Gilmore, who was licensed to practice neither medicine nor optometry, operated a jewelry store and in connection therewith maintained an optical department in which refraction was done by Sidel, apparently a licensed optometrist, and by Bertrem, a licensed physician, both of whom were employed by Gilmore on a straight salary basis. The Florida State Board of Optometry instituted proceedings to enjoin Gilmore, Sidel and Bertrem from practicing optometry. The trial court restrained Gilmore from continuing to employ Sidel for the practice of optometry but refused to restrain Gilmore himself from practicing or from continuing to employ Bertrem, the licensed physician, to practice. The board then appealed to the Supreme Court of Florida.

Section 11 of the Florida optometry practice act (Laws of Florida, Acts of 1939, chapter 19031) makes it "unlawful for any corporation, lay body, organization, group, or lay individual to engage, or undertake to engage in, the practice of Optometry through means of engaging the services, upon a salary, commission, or lease basis, or by other means or inducement, any person licensed to practice Optometry in the State of Florida." Section 8 of this same act makes it unlawful for any person to practice optometry in the state without first procuring a certificate of registration and license but provides that "the terms and provisions of this Act shall not apply to duly licensed physicians and surgeons." The jeweler and the physician on appeal argued that the action of the trial court was proper because, while section 11 expressly prohibits an unlicensed person from practicing optometry through a person licensed to practice optometry, section 8 frees all physicians from the restrictions imposed generally on those who are privileged to represent themselves as optometrists. The Supreme Court, however, would not so construe the act. The provision, said the Court, that the act should not apply to duly licensed physicians and surgeons is included in the section making it unlawful to practice without registration and license. It is patent that physicians are exempt from the provisions of the optometry practice act because their training is so thorough that they are fitted to perform those services for which optometrists are also qualified. Thus, a physician, as such, is not required to procure a certificate of registration and license as a registered optometrist to practice optometry lawfully. If a physician practices optometry on his own account and responsibility he is by schooling presumed properly equipped and there is no need to examine into his fitness, the diagnoses and prescriptions for correction and relief of the human eye being an incident to and included in his medical education. But when a physician steps out of character and becomes the employee of a person himself not entitled to engage in the practice of optometry a direct violation of section 11, quoted above, results. The provision of the act of which the jeweler has run afoul denounces the employment on a salary basis of "any person licensed to practice Optometry." Here qualifications are not the criterion but the act condemned by the legislature is the hiring by one unlearned in the profession of another who is permitted by his knowledge to engage in it. The evil sought to be prevented by such a relationship may be tersely stated. In this situation the responsibility of the employee in the performance of services important to those whose eyes are abnormal is confused with his loyalty to the employer, while the latter, although unskilled in the work, is accountable to patients to whom he is not personally permitted to minister. The result is a broken relationship between a professional man and those who engage his services.

The court concluded, therefore, that the optometry practice act prohibits the practice of optometry under the circumstances here present and accordingly reversed the decree of the trial court refusing to enjoin Gilmore and Bertrem, the licensed physician, from engaging in the practice of optometry.—*State Board of Optometry v. Gilmore, 3 So. (2d) 708 (Fla., 1941).*

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, Atlantic City, N. J., Jan. 11-15. Dr. Rexford L. Diveley, 1103 Grand Ave., Kansas City, Mo., Secretary.

National Society for the Prevention of Blindness, New York, Dec. 4-6. Mrs. Eleanor Brown Merrill, 1790 Broadway, New York, Executive Director.

Puerto Rico, Medical Association of, Santurce, Dec. 11-14. Dr. David E. Garcia, P. O. Box 3866, Santurce, Secretary.

Radiological Society of North America, San Francisco, Dec. 1-5. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 6. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Society of American Bacteriologists, Baltimore, Dec. 29-31. Dr. I. L. Baldwin, Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.

Southern Surgical Association, Pinehurst, N. C., Dec. 9-11. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, St. Paul, Dec. 5-6. Dr. Arthur R. Metz, 2449 Washington Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

42:373-556 (Sept.) 1941. **Partial Index**

Obstetric Responsibility for Prevention of Fetal Deaths. A. H. Aldridge and R. S. Meredith, New York.—p. 373.
*Common Etiology of Erythroblastosis and Transfusion Accidents in Pregnancy. L. Burnham, Englewood, N. J.—p. 389.
Parenteral Vitamin K Therapy in Antepartum Women and Its Effects on Infant's Prothrombin Levels: Preliminary Report. R. L. McCready, E. T. Callahan and D. J. Grandin, New York.—p. 398.
Vitamin A in Pregnancy: II. Comparison of Dark Adaptation and Serum Tests. J. C. Hirst and R. E. Shoemaker, Philadelphia.—p. 404.
*Prothrombin Concentration and Mineral Oil. C. T. Javert and C. Macri, New York.—p. 409.
Prothrombin Concentration in Normal Pregnancy. C. T. Javert and C. Macri, New York.—p. 415.
*Placental Blood Plasma. R. M. Curtis and R. W. Worthington Jr., Baltimore.—p. 428.
Role of Cesarean Section in Toxemias of Pregnancy. H. A. Strauss and Leah Fisher, Chicago.—p. 440.
Eleven Year Survey of Cesarean Section at a Small Community Hospital. W. T. Liccione, Mount Vernon, N. Y.—p. 446.
Shortening of Labor with Syntropan. J. E. Stoll, Chicago.—p. 473.
Some Etiologic Factors in Sterility: Study of 483 Patients Admitted to the Sterility Clinic, Bellevue Hospital. Virginia Clay Hamilton, Bath, Maine.—p. 477.
Hormone Management of Nausea and Vomiting of Early Pregnancy. E. Shute, London, Ont., Canada.—p. 490.
A Twenty-Four Hour Pregnancy Test. R. T. Frank and Rose L. Berman, New York.—p. 492.
Studies in Viability of Human Spermatozoa: Preliminary Report. M. D. Klein and M. Saroka, New York.—p. 497.
Menorrhagia as Primary Factor in Various Blood Dyscrasias. C. L. Buxton, New York.—p. 502.
Effect of Intramuscular Injections of Whole Blood on Prothrombin Index of Newborn Infant. S. S. Gellis and R. A. Lyon, Cincinnati.—p. 519.
Inhibition of Lactation with Stilbestrol. E. B. Mendel, A. M. Goldman and A. Caire Jr., New Orleans.—p. 528.
Roentgenologic Sign for Detection of Placenta Previa. R. P. Ball and R. Golden, New York.—p. 530.

Erythroblastosis and Transfusion Accidents.—Burnham calls attention to the common etiology of two apparently unrelated conditions, erythroblastosis fetalis and certain transfusion accidents occurring in pregnancy. The etiology of erythroblastosis fetalis resides in an immunologic incompatibility between the fetus and the mother, that is, there is present in the fetal erythrocytes an antigen inherited from the father which is lacking in the mother. The antigen diffuses from the child into the mother's circulation and stimulates the formation of destructive antibodies. These antibodies readily diffuse into the fetal circulation, where they can attack the erythrocytes which contain the antigen and thereby cause erythroblastosis. Should such a mother be given a transfusion containing the antigen, the destructive antibodies (agglutinins) in her circulation would agglutinate and hemolyze the transfused blood causing the frequently fatal oliguria or anuria. These reactions occur between bloods of the same group and in spite of apparently compatible cross matching. Stated in another way, when a rhesus monkey antigen negative woman is carrying an Rh (rhesus) positive baby, sometimes the baby's blood stimulates the mother to form the anti-Rh agglutinin. This antibody, in turn, passes back through the placenta and destroys the baby's Rh positive blood and causes erythroblastosis. Should the mother be transfused with Rh positive blood, the agglutinin can agglutinate and destroy the transfused blood and its hemoglobin blocks the kidneys and causes oliguria or anuria. Should a mother of a possible erythroblastosis baby require a transfusion, it is safer to determine her Rh status and to use a corresponding donor, usually an Rh negative donor. Should no precautionary measures be available in suspicious cases it is safer to use blood substitutes, preferably blood plasma. The erythroblastosis group must be broadened to include not only hydrops fetalis, icterus gravis and congenital anemia but some of the macerated fetuses not due to syphilis, diabetes or toxemia and also many, if not most, of the anemias of the newborn. Some cases of miscarriage may likewise belong in this group.

Prothrombin Concentration and Liquid Petrolatum.—Javert and Macri point out that the intermittent or regular use of liquid petrolatum (mineral oil) has been observed to reduce and to maintain the reduction of the prothrombin concentration in pregnancy. Its intermittent use reduced the prothrombin levels in 3 of 9 patients, while daily intake for longer than one or two weeks resulted in a lowered prothrombin in 7 of 10 patients. Apparently the oil interferes with the absorption of vitamin K or it may inhibit bacterial synthesis in the intestine. The oil may even accumulate in the hepatic cells. The evidence at hand suggests that the oral administration of vitamin K to pregnant women may prove of little or no value unless the simultaneous use of liquid petrolatum is curtailed.

Placental Blood Plasma.—Curtis and Worthington state that sterile plasma can be obtained from placental blood in worthwhile quantities. They obtained an average of 103 cc. of whole blood from 200 placentas. From 128 cc. of citrated placental blood they obtained an average of 70 cc. of consistently uncontaminated citrated plasma (25 cc. of 2.5 per cent sodium citrate solution being placed in each collecting bottle). The blood is taken from the cord immediately after delivery, prior to the expulsion of the placenta and before any perineal repair is made. The cord is clamped and cut 2 inches (4.8 cm.) from the unbilicus. The collecting flask and cord are wrapped in a sterile towel and held by an assistant, thus preventing any contamination by amniotic fluid. The cord is milked to express the blood while pressure is made on the uterus to fill the cord with the blood which remains in the placenta. A test for syphilis is made on the collected blood. Blood has not been taken from patients whose membranes have been ruptured for forty-eight or more hours or from those with any evidence of a disease transmittable by the mother to the fetus. The authors have used placental plasma in varied clinical conditions. The clinical response shown has been gratifying and there were no local or systemic reactions following its administration. Some of the clinical conditions were hypoproteinemia, acute glomerulonephritis, infections with associated dehydration and shock due to a variety of causes. The authors constructed an inexpensive but satisfactory dehydration apparatus and are dehydrating pooled placental plasma obtained from the obstetric service of another hospital. They feel that during a national emergency placental blood from several hospitals could be transported to central depots for plasma preparation and storage. If their preliminary experiments are substantiated, dried placental plasma used locally to stimulate cell growth may offer a definite advance in the treatment of wounds.

Arkansas Medical Society Journal, Fort Smith

38:79-98 (Sept.) 1941

Sinus Disease Is Curable When Correctly Diagnosed and Properly Treated. V. L. Payne, Pine Bluff.—p. 79.
Significance of Cough as Symptom. O. C. Melson, Little Rock.—p. 82.

Journal of Allergy, St. Louis

12:327-424 (May) 1941

Studies on Blood Histamine in Cases of Allergy: I. Blood Histamine During Wheal Formation. B. Rose, Montreal, Canada.—p. 327.
Histaminase in Allergy: Study of Its Effects on Skin Reactivity to Histamine and to Allergens. H. Miller, R. C. Hawes and G. Piness, Los Angeles.—p. 335.
Influence of Histaminase on Course of Anaphylaxis and Histamine Shock in Guinea Pigs. O. W. Barlow and E. Homburger, Rensselaer, N. Y.—p. 346.
Action of Histaminase on Histamine Content of Blood of Rabbit. R. Williams, H. L. Alexander and T. Kircher, St. Louis.—p. 359.
Slowly Absorbed Gelatin-Pollen Extract for Treatment of Hay Fever. W. C. Spain, A. M. Fuchs and Margaret B. Strauss, New York.—p. 365.
Treatment of Hay Fever by Injections of Suspended Pollen Tannate. H. L. Naterman, Boston.—p. 378.
Study of Clinical Sensitivity to Air-Borne Molds. Edna S. Pennington, Nashville, Tenn.—p. 388.

Journal of Nervous and Mental Disease, New York

93:701-836 (June) 1941

Bilateral Fracture of Femoral Necks Caused by Metrazol Induced Convulsions. S. Androp, Catonsville, Md.—p. 701.
Posthospital Adaptation of Selected Group of Patients with Dementia Praecox. J. L. Hoffman, E. H. Parsons and Margaret W. Hagan, Washington, D. C.—p. 705.
Esophageal Spasm: Observation of Emotional Influences by Means of Esophagoscope: Report of Case. W. B. Faulkner Jr., San Francisco. —p. 713.
Color Blindness and Tone Deafness Restored to Health During Psychotherapeutic Treatment Using Dream Analysis. K. R. Stewart, Mamaroneck, N. Y.—p. 716.
Protrusion of Two Intervertebral Disks in Cervical Region: Report of Case. T. T. Stone, A. J. Arieff, L. Kaplan and C. Brown, Chicago. —p. 719.
Paramyoclonus Multiplex of Friedreich: Report of Case with Symptomatic Recovery Three Days After Onset. E. S. Brewster, Boone, Iowa. —p. 723.
Physicosocial Basis of Mental Disorder. G. W. Kisker and G. W. Knox, Columbus, Ohio.—p. 731.
Allergy and Nervous Diseases. N. W. Winkelman and M. T. Moore, Philadelphia.—p. 736.
Permeability Changes in Brain Induced by Metrazol and Insulin Convulsions. E. A. Spiegel and Mona Spiegel-Adolf, Philadelphia.—p. 750.

94:1-132 (July) 1941

Paralyzing Effect of Fright. E. F. Reaser, Huntington, W. Va.—p. 1.
Insulin Hypoglycemia and Electrocardiogram. B. E. Goodrich and F. J. Smith, Detroit.—p. 10.
The Chronic Alcoholic as a Neurotic and a Dreamer. B. Karpman, Washington, D. C.—p. 17.
Innervation of Limbs. J. A. Abbott and M. Moore, Boston.—p. 41.
Hypnotic Suggestion: Its Dynamics, Indications and Limitations in Therapy of Neurosis. S. Lorand, New York.—p. 64.
Psychopathologic Disorders in the Mother. Mabel Huschka, New York. —p. 76.

New York State Journal of Medicine, New York

41:1795-1890 (Sept. 15) 1941

Cerebral Palsy Problem. L. C. Duryea, New York.—p. 1819.
Neurologic Aspects of Spasticity and Athetosis. T. J. Putnam, New York.—p. 1822.
Differential Characteristics of Spasticity and Athetosis in Relation to Therapeutic Measures. W. M. Phelps, Baltimore.—p. 1827.
Treatment of the Hypochondriac. R. B. McGraw and Z. Piotrowski, New York.—p. 1833.
Therapeutic Relaxation. H. J. Behrend and J. Weiss, New York.— —p. 1838.
*Pulmonary Embolism—Diagnosis. J. M. Freston, New York.—p. 1843.
Popular Education as Factor in Solution of Cancer Problem. J. M. Swan, Rochester.—p. 1849.
Roseola Infantum (Exanthem Subitum). B. B. Breese Jr., Rochester. —p. 1854.
*Acute Bacterial Endarteritis of Patent Ductus Arteriosus. W. T. Gibb Jr., New York.—p. 1861.

Pulmonary Embolism.—Freston reports the 5 cases of pulmonary embolism encountered at the Roosevelt Hospital within one year; 4 were confirmed at necropsy and 1 patient recovered. A clinical diagnosis was made in only 1 of the 5 cases. Of the 5 patients, 4 were between 50 and 55; the fifth was 37. Only 1 was a woman. Two had had symptoms referable to the cardiovascular system for two and five years; auricular fibrillation was present on admission in the latter patient. The onset was sudden in 3 and less dramatic in 2. The chief complaint at onset was sharp axillary chest pain in 2, precordial burning pain with accompanying knifelike stabbing pain in 1, substernal fulness in 1 and sharp abdominal pain in 1. Dyspnea was present in all on or before admission. Faintness or actual fainting had occurred in 3, localized pain in the lower extremities in 1, hemoptysis in 1, mental symptoms in 1 and maniacal episodes in 2. The physical signs on admission included dyspnea, tachycardia, fever, leukocytosis and cyanosis in all, and polycythemia in 1. Dulness or rales were present in 3; fluid was present in 2 of these. The blood pressure was depressed in 2 and could not be obtained in 1 whose symptoms occurred an hour and a half before admission and in whom a tender popliteal mass led to the one correct diagnosis. In the others shock or phlebothrombosis was absent. Pulmonary embolism, a disease of recurrent multiple embolizations, offers an opportunity to attempt therapy. Efficacious therapy will depend on an accurate diagnosis of the original condition contributing to embolization. Electrocardiographic changes diagnostic of pulmonary embolism were present in 3 of the patients, and 2 had single electrocardiograms that were not diagnostic. Characteristic electrocardiographic changes depend on cor pulmonale—on metabolic changes in the right and possibly the left ventricle. If clinical collapse does not occur, the electrocardiogram will probably be normal. Conditions that produce right ventricular strain, mitral disease, pulmonary emphysema and so on produce similar electrocardiographic changes and must be ruled out. The temporary and shifting electrocardiographic changes are probably the most significant diagnostic features. The roentgen diagnosis of pulmonary infarction also presents its problems. Confusion is produced by the presence of fluid and of pulmonary congestion, either of which masks the roentgen signs. However, pulmonary embolization with or without infarction is a fairly common condition, often unrecognized when the primary venous thrombosis is not obvious. Thrombosis of the popliteal veins—unilateral in 3 and bilateral in 1—was found at the necropsy of the 4 patients who died. Edema was either absent or slight or it was considered due to the primary cardiac condition.

Endarteritis of Patent Ductus Arteriosus.—Gibb reports an instance of a person who had had an uncomplicated patent ductus arteriosus for fifty years before an acute bacterial endarteritis that had involved the pulmonary artery in the region of the ductus and had extended into the ductus itself and a small part of the aorta superimposed itself. The cardiac valves were free of any bacterial involvement. They showed no evidence of any other disease process except some thickening due to tension and arteriosclerosis. No primary source for this infection other than an extensive bronchial inflammation was found at necropsy. The explanation is that a transient bacteremia arose from such a source and produced the acute endarteritis. Involvement of the pulmonary artery was apparently responsible for the pulmonary infarcts, and probably the extension of the bacterial lesion into the aorta and the associated phlebitis of the pulmonary vein led to the systemic involvement. During the acute disease, a cardiac murmur was not audible. The explanation for this discrepancy was apparent at necropsy in that the entire lumen of the ductus was occluded by vegetations, and it was assumed that but little blood passed through this arteriovenous shunt. Dilatation of the pulmonary artery and pulmonary conus offers evidence for the belief that the ductus arteriosus was patent for some time prior to the endarterial infection. This was further suggested by hypertrophy and dilatation of the right cardiac chambers, indicating the long-standing anomalous shunting of blood. Aside from the usual contraindications to any extensive surgical procedure, the real difficulty in ligation of uncomplicated patent ductus arteriosus lies not so much in the accurate diagnosis of the lesion or in the determination of the optimal time for operation but, rather, in persuading parents to have an apparently healthy young person subjected to an operative procedure with a mortality incidence of at least 10 per cent.

Philippine Medical Association Journal, Manila

21:331-378 (July) 1941

Ascaris Lumbricoides in Common Bile Duct: Report of Case. J. Estrada and E. Garcia, Manila.—p. 331.
Role of X-Ray in Diagnosis of Acute Abdominal Conditions. P. S. Chikiamco and J. L. Torres, Manila.—p. 337.
Sulfathiazole in Certain Acute Infections: Preliminary Report. C. Mata, San Juan del Monte.—p. 341.
The Expert Witness. G. T. Lantin, Manila.—p. 347.

Wisconsin Medical Journal, Madison

40:653-772 (Aug.) 1941

Extra-Abdominal Diseases That May Cause Abdominal Symptoms: I. Repercussions of Personality Disorders. E. G. Billings, Denver.— p. 667.
Id.: II. Cardiac and Pulmonary Diseases. A. R. Elliott, Chicago.— p. 672.
Id.: III. Allergic, Hematologic, Endocrine, Deficiency and Infectious Diseases. F. W. Madison, Milwaukee.—p. 676.
Practical Value of Gonioscopy for Understanding, Diagnosis and Treatment of Glaucoma. P. C. Kronfeld, Chicago.—p. 681.

40:773-880 (Sept.) 1941

Management of Infantile Allergic Eczema. G. M. Cline, Bloomington, Ill.—p. 789.
Emotional Factors in Allergic States. T. L. Squire, Milwaukee.—p. 793.
Oil Bases in Estrogenic Substances as Cause of Allergic Dermatitis: Report of Case. L. S. Markson and C. M. Schoen, Milwaukee.— p. 796.
Molds as Cause of Seasonal Allergy: Spore Count of Milwaukee. B. B. Schoenkerman, Milwaukee.—p. 797.
Vertigo. W. E. Grove, Milwaukee.—p. 799.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:255-292 (Aug. 23) 1941

*Amebic Dysentery and Its Effective Treatment: Critical Study of 535 Cases. P. Manson-Bahr.—p. 255.
Amebiasis—Pulmonary Complications. B. A. Dormer and J. Friedlander.—p. 258.
Surgical Complications of Amebic Dysentery. H. W. S. Wright.—p. 261.
Cysticercosis Epilepsy. C. W. Ewing.—p. 263.
Massive Adrenal Carcinoma with Pseudohermaphrodism. M. Albert.—p. 265.

Treatment of Amebic Dysentery.—Manson-Bahr reviewed the records of 535 cases in which Endameba histolytica or its cysts were demonstrated by personal observation. Metastatic complications were not considered unless they were accompanied by manifestations of active amebic dysentery. Of the 535 patients, 259 had at some previous time received emetine injections alone or combined with other drugs. The results do not support the assumption that hypodermic injections of emetine are a certain cure. Such treatment controls the urgent clinical manifestations but does not, in the majority of instances, eradicate the infection. Evidence indicates that, far from curing the patient, the practice tends to render the amebas emetine fast and makes final cure more difficult. There were 7 emetine intoxications in the series. Twenty patients had relapses. Among 114 patients treated with emetine bismuth iodide in doses totaling 20 to 40 grains (1.3 to 2.6 Gm.) 7 (6.1 per cent) had relapses. Some proved singularly resistant, and 3 remained uncured after nine separate courses of the drug. Of 13 patients given emetine periodide in total doses from 2.6 to 4.6 Gm., 5 relapsed subsequently. Five patients were given auremetine (an aniline dye and emetine). The toxic effects were considerable, and all 5 patients had subsequent relapses. The results with quinoxyl (oxyquinoline sulfonic acid and iodine), given to 35 patients by mouth and rectum, led the author to believe that it is especially useful in infections resistant to emetine bismuth iodide but not in freshly occurring infections. Eight patients had subsequent relapses. The author believes that a combined treatment introduced by him and consisting of quinoxyl retention enema by day and emetine bismuth iodide by night is most efficacious. The treatment is continuous and is maintained for ten to twelve days. The relapse rate among 361 patients treated in this manner was 3.7 per cent. These refractory patients were eventually cured by further intensive treatments with emetine bismuth iodide and quinoxyl. Follow-up study for ten years and even longer has verified these results. With this treatment it is not necessary to restrict the diet. Seven of the 8 patients treated with acetarsone had subsequent relapses, and there were 5 instances of drug poisoning. Carbarsone proved no more effective than acetarsone, and there appears to be the same danger of arsenical poisoning. Relapses took place as soon as a course had been completed. No permanent cures were registered after the trial of several other drugs. It is evident that in treating chronic intestinal amebiasis the principle of antisepsis has to be maintained.

2:293-322 (Aug. 30) 1941

Clinical Observations on Air Raid Casualties. R. T. Grant and E. B. Reeve.—p. 293.
*Herpes Labialis After Sulfapyridine and T. A. B. Therapy. C. E. van Rooyen, A. J. Rhodes and A. C. Ewing.—p. 298.
Puerperal Tetanus: Case. B. Maclean and P. Challen.—p. 302.
Sandfly Fever and Benign Lymphocytic Meningitis. A. S. Pearson.—p. 303.
Persistent Lactation with Note on Chiari and Frommel's Disease. B. Gilbert.—p. 305.

Herpes Labialis After Sulfapyridine and T. A. B.—According to van Rooyen and his associates, last winter they encountered 27 cases of herpes labialis among patients who had received a full course of sulfapyridine for gonorrhea and 6 cases among healthy nursing orderlies. The herpes developed after a provocative dose of T. A. B. vaccine. The clinical results of sulfapyridine therapy were excellent in that the urethral discharge had abated by the fifth day, so that on the sixth day patients were given a 0.2 cc. dose of T. A. B. vaccine intravenously as a provocative test of cure. The first 24 of 25 patients who received this dose of vaccine had herpes labialis forty-eight hours later; 16 showed only a slight eruption which cleared up spontaneously without any treatment, but the lesions of the others were severe and a 50 per cent absolute alcohol dressing was applied with good effects. After this the dose of vaccine was reduced by half but again herpes developed in 3 of 6 persons. Thereafter hypertonic saline solution (instilled and retained in the urethra for a short time) was substituted as an alternative, and no further cases of herpes appeared. The conclusion reached was that if herpes labialis is to be avoided T. A. B. vaccine should not be given intravenously to persons immediately after a course of sulfapyridine therapy. This is particularly so during the winter months, when the herpes carrier rate is relatively high. The possibility that the batch of vaccine used became contaminated was explored, but animal inoculation and sterility tests proved that the product was faultless. Finally one of the authors was given 1 cc. of the vaccine subcutaneously without herpes developing. A high virus carrier rate can exist in a community without a high incidence of herpes labialis. In support of this the authors point out that during the winter months they encountered 6 cases of herpes arising spontaneously among healthy nursing orderlies and others in a unit of about 300. All the persons treated for gonorrhea probably carried the herpes virus in their saliva; the large doses of sulfapyridine did not destroy the herpes virus, nor did they cause herpes labialis but the sulfapyridine appeared greatly to enhance the herpetogenic effect of T. A. B. vaccine. The phenomenon was not due to leukopenia.

Lancet, London

2:271-300 (Sept. 6) 1941

The Soldier's Defense and the Public's Attitude. W. C. M. Scott.—p. 271.
*Renal Complications of Sulfapyridine Therapy. S. M. Laird.—p. 272.
Bacteriology of Impetigo Contagiosa. R. Cruickshank.—p. 275.
New Gastroscope with Controllable Flexibility. H. Taylor.—p. 276.
Possible Case of Tick-Borne Typhus. G. B. Ludlam, I. R. C. Batchelor and A. J. Rhodes.—p. 278.
Adrenalin-Ascorbate Suspensions in Bronchial Asthma. A. Kennedy.—p. 279.

Renal Complications of Sulfapyridine Therapy.—Laird reports the occurrence of hematuria in 5 soldiers being treated for gonorrhea with sulfapyridine. The clinical picture of the renal complication may take one of three forms: microscopic hematuria in which pain is only sometimes present, gross hematuria usually accompanied by pain which clears up rapidly on withdrawal of the drug and ample fluid therapy and the hematuria in which despite remedial measures there is impairment of renal function which leads to nitrogen retention, anuria and death. These forms may appear as separate entities, but they may, in fact, constitute only progressive stages of the same process. Examples of the mildest form will be detected only by frequent microscopic examinations of the urine. In their absence renal complications will be detected only when they have progressed to the second stage. The author suggests that crystals of acetyl sulfapyridine, precipitated in the renal tubules, pelves and ureters, produce bleeding, edema and possibly reflex spasm, which may in severe cases lead to ureteric obstruction, hydronephrosis and failure of renal function. Factors which enhance precipitation include intensity of dosage, rate of absorption and excretion, the proportion of free and conjugated sulfapyridine in the blood and urine, the amount of fluid intake and loss and the concentration and reaction of the urine. The most important prophylactic measure is a daily intake of not less than 3,000 cc. of fluid. Treatment of the first and second stages of the complication is simple and definitely effective. In the third stage, a favorable prognosis depends on the immediate institution of ureteric catheterization and lavage. This proved a life-saving measure in 1 of the author's patients.

Tubercle, London

22:159-182 (July) 1941

What Are We Aiming at in Collapse Therapy? S. V. Pearson.—p. 159.
Mobile Mediastinum. A. C. Penman.—p. 166.

Schweizerische medizinische Wochenschrift, Basel

71:781-804 (June 28) 1941

Treatment with Female Sex Hormones: Experiences and Practical Conclusions. R. Wenner.—p. 781.
*Chemical Structure of Sulfanilamide Derivatives as Determining Factor in Their Toxic Effect on Erythrocytes (Anemias with Inner Bodies). S. Moeschlin.—p. 789.
Aspects of So-Called Ileitis Terminalis. F. Buxtorf.—p. 792.
Plasmocytoma of Upper Respiratory and Food Passages. K. M. Menzel. —p. 794.
Medical Significance of Recent Developments in Physics and Technic of Irradiation. J. H. Müller.—p. 796.

Toxic Effect of Sulfanilamide Derivatives on Erythrocytes.—In an earlier report (*Schweiz. med. Wchnschr.* **70**:786 [Aug. 17] 1940; abstr. THE JOURNAL, Oct. 19, 1940, p. 1410) Moeschlin called attention to the fact that some derivatives of sulfanilamide cause the appearance of anemias in which the erythrocytes contain inner bodies. This observation induced him to investigate in animal experiments to what extent the inner body reaction is determined by the different chemical structure of the various sulfanilamide derivatives. The experiments were made on white mice, and comparatively high doses were used. It was found that unaltered sulfanilamide exerts the strongest inner body reaction and sulfapyridine takes second place in this respect. Other heterocyclic sulfanilamide preparations cause much weaker inner body reactions and produce no real anemia. Use of sulfathiazole never results in the formation of inner bodies, but sulfamethylthiazole causes some inner body reaction. These observations indicate that the toxic action on erythrocytes and hemoglobin, as well as the hemolytic anemias occasionally elicited thereby, is probably the result of the structure of the sulfanilamide derivatives. If the sulfanilamide group can be separated from the compound, its oxidation products seem to elicit toxic effects. Experiments on mice, by revealing the inner body reaction produced by newly introduced sulfanilamide derivatives, will help decide whether the clinical use of the new compounds is likely to become complicated by hemolytic anemia.

Boletin de la Sociedad Cubana de Pediatria, Habana

13:357-392 (Aug.) 1941. **Partial Index**

Neurofibromatosis (Recklinghausen's Disease) in Girl Aged 3½ Years: Case. T. Valledor, L. Expósito, A. de Feria and A. Sainz de la Peña y Nodarse.—p. 357.
*New Test for Functions of Liver. A. Castellanos and J. Beato Núñez. —p. 382.

New Test for Liver Function.—Castellanos and Beato Núñez describe a carotene test for liver function which involves an easy technic, based on the physiology of the liver. The patient takes fruits or fruit juices instead of breakfast. Five or 6 cc. of blood is withdrawn. Then an intravenous injection of 0.2 mg. of colloidal carotene for each kilogram of body weight is administered. Five minutes later blood is again withdrawn. The amount of total carotenoids in the blood is separately determined in the two different blood specimens by the Clausen and McCoord method. The carotene content in the two samples of blood, namely those which were withdrawn before and five minutes after the intravenous injection of carotene, is the same when hepatic function is normal. Any increase of the carotene content five minutes after the intravenous injection of carotene indicates hepatic insufficiency. The authors verified the results by comparing them with those of the classic tests. They studied the relation between the results of the test and the anatomic conditions of the liver by means of puncture biopsy and in some cases by autopsy. They conclude that the test is reliable and better than the classic tests. The article is a preliminary note.

Revista Argentina de Neurol. y Psiquiat., Rosario

6:1-68 (March) 1941. **Partial Index**

*Pituitary (Cushing's) Basophilism. T. Fracassi.—p. 3.
Hereditary Cerebellar Ataxia Associated with Adiposis and Dystrophia of External Genitals. T. Fracassi, D. E. Garcia, R. J. Taltavull and L. Imelio.—p. 13.

Pituitary (Cushing's) Basophilism.—Fracassi reports 3 cases of basophilism of the pituitary type. The symptoms were typical in all cases. Two of the patients had complete impotence. One had osteoporosis. The menopause was the stimulating factor for the development of the disease in 1 case. High voltage roentgen therapy on the hypophysis and polyglandular opotherapy early in the course of the disease resulted in the cure of a patient. The patient in the menopause had relief of the menopausal symptoms from administration of an estrogenic substance. The enormous lipodystrophic tissues were removed by lipectomy.

Revista Médica del Hospital General, Mexico, D. F.

3:478-525 (June 15) 1941. **Partial Index**

*Sulfapyridine in Therapy of Mucosanguineous Colitis. R. Aguilar.—p. 504.

Sulfapyridine in Colitis.—Aguilar reports good results from sulfapyridine therapy of mucosanguineous colitis. Administration of 100 to 150 mg. of sulfapyridine per kilogram of body weight in twenty-four hours was in the great majority of instances followed by an improvement, sometimes dramatic, and by cure of the patient in two or three days. The author's experience is based on treatment in 200 cases. He advises the systematic use of sulfapyridine in the treatment of mucosanguineous colitis in association with proper diet, symptomatic treatment and transfusions of blood or serum.

Deutsche medizinische Wochenschrift, Leipzig

67:587-614 (May 30) 1941. **Partial Index**

After-Care of Patients with Diabetes Mellitus. F. Bertram and H. Bünger.—p. 587.
*Therapy of Pernicious Anemia Refractory to Liver Treatment. A. Budding.—p. 591.
*Hypoprothrombinemia, Tendency to Hemorrhage and Hemoptysis in Pulmonary Tuberculosis and Their Modification by Vitamin K. G. Bauer. —p. 594.
Diagnosis of Acute Lupus Erythematosus. L. Thelen and H. Weil.—p. 598.
Function of Ruptured Kidney: Casuistic Contribution to Traumatic Renal Rupture. Antonina Sarens.—p. 600.

Pernicious Anemia Refractory to Liver.—Buding reports 2 cases of pernicious anemia in which generous doses of potent liver extracts failed to improve the blood picture. The first of these patients had gastrointestinal disturbances and lived chiefly on gruels, excluding from her diet practically all foods which provide the body with nicotinic acid or its amides. The second patient had achylia, which made for deficient absorption. Her diet likewise consisted chiefly of carbohydrates and consequently was relatively deficient in vitamin B_1, since it is known that vitamin B_1 requirements are greatly increased if the carbohydrate content of the diet is high. The patient also had exophthalmic goiter and a high metabolic rate, which is known to increase further the vitamin B_1 requirements. The blood picture of the first patient rapidly improved when nicotinic acid amide was given in addition to liver extract; in the second patient the same result was accomplished by adding vitamin B_1 to the diet. The author concludes that the failure to respond to liver therapy was due to impairment of vitamin equilibrium.

Vitamin K in Pulmonary Tuberculosis.—Bauer calls attention to the difficulties encountered in the determination of the prothrombin blood content and reports studies on it in patients with pulmonary tuberculosis. Some patients showed considerable reduction in prothrombin, which could be temporarily combated by administration of vitamin K. There was no parallelism between the severity of tuberculosis and the prothrombin reduction of the blood. Among 30 patients with a tendency to hemorrhages there were only 8 who had a noticeable reduction in prothrombin. The concentration of prothrombin can be considerably increased by the injection of vitamin K. This increase can still be demonstrated thirty-six hours after the injection. It does not develop with the same rapidity in all patients; in some it is not ascertainable for twenty-four hours after the injection. An especially low prothrombin concentration was observed in 2 patients who for weeks had had diarrhea (amyloidosis, intestinal tuberculosis). Absorption disturbances and amyloidotic changes at the sites where prothrombin is formed are regarded as causes. Irregularity in prothrombin reduction of the examined patients suggests that it is caused by the toxic impairment of an organ (liver). In 10 patients the protfirombin content of the blood was examined in the course of hemoptysis. A reduction could be ascertained in 5, and in 2

of these the hemorrhage ceased when the prothrombin content increased following administration of vitamin K. In 2 others hemoptysis took place in spite of an increase in the prothrombin content even during the administration of vitamin K. In 1 patient the bleeding ceased even before an increase in prothrombin was demonstrable.

Acta Medica URSS, Moscow

3:359-504 (No. 4) 1940. **Partial Index**

*New Ways in Surgical Treatment of Profuse Gastroduodenal Hemorrhage. S. S. Yudin.—p. 359.
Radical Therapy of Cancerous Neoplasms of Cardia and of Lower Portion of Esophagus. A. G. Savinych.—p. 382.
Cholecystitis. P. G. Tschassownikow.—p. 407.
Surgical Treatment of Uterine Carcinoma and Its Late Results. B. A. Archangelsky and O. E. Nudolskaja.—p. 425.
Anatomy of Pterygopalatine Ganglion and Problem of Its Anesthetization. M. F. Iwanitzkij and A. I. Feldmann.—p. 432.
*Etiology of Tick (Spring-Summer) Encephalitis. W. D. Solowjow.—p. 484.

Surgical Treatment of Profuse Gastroduodenal Hemorrhage.—Discussing the divergence of opinion regarding the treatment of severe gastroduodenal hemorrhage and the discrepancies in the mortality from this cause, Yudin points out that massive and acute hemorrhages are not due to ulcer in all cases. Finsterer maintained that in 10 per cent of cases massive gastric hemorrhage is caused by disorders other than ulcer; Balfour asserted that this percentage was from 20 to 25 and the author found it to be over 36. The peril to the patient's life is much greater from the ulcerous than from the non-ulcerous hemorrhages. Neither the combination of all conservative measures nor repeated transfusions can save a patient's life if a vessel of considerable caliber has been eroded in a callous ulcer. In most cases resection of the stomach is indispensable. The "exclusion" operation and simple gastroenterostomy are of no use, and in severe cases they would involve an unjustifiable additional risk. Ligation of all vessels around the ulcer may be practical in rare cases, that is, when the ulcer is in accessible parts of the anterior wall of the stomach or the duodenum. Cases in which surgical treatment was given for profuse gastroduodenal hemorrhage may be divided into three groups. The first group includes cases in which hemorrhage had already ceased, collapse had disappeared and the hemoglobin content and the number of erythrocytes were already on the increase. The intermediary stage operations resulted in a mortality of 7.5 per cent (8 deaths in 106 cases). The second group includes 97 cases of emergency operations, the patients being operated on immediately after arrival at the clinic. There were 16 deaths in this group. The third group, in which "desperate operations" were done, includes only cases of severest anemia and intractable hemorrhage. Judging chiefly by the caliber of the eroded vessel, it can be asserted that the patients in this third group would have died if only conservative treatment had been employed. More than half of these patients were saved. During or immediately after the operation, patients with gastroduodenal hemorrhage should be given abundant blood transfusions. Great stores of cadaver blood available at the author's hospital made it possible to venture immediate gastric resection in some cases with an apparently hopeless prognosis. Cadaver blood has proved especially valuable since the drip method has made possible the transfusion of really large quantities. Cadaver blood simplified the problem of donorship for enormous drip transfusions; instead of the blood of four to ten donors being mixed, blood from one to three donors is sufficient for one drip transfusion, and the risk of hemolysis is greatly reduced. Furthermore, since the discovery of fibrinolysis in the blood after sudden death (Skundina), it has been possible to dispense with stabilizers and anticoagulants. It is possible to store cadaver blood without the addition of preservatives.

Etiology of Tick Encephalitis.—Solowjow reports that in recent years a peculiar form of encephalitis has been observed in the forest regions of Siberia. It begins suddenly with high fever, severe headache, vertigo and vomiting. Together with meningeal symptoms, localized symptoms of involvement of the central nervous system develop in the form of paralysis in the region of the upper and lower extremities and in the musculature of the neck and back. The fever persists for four to ten days. Some patients retain permanent atrophic paralysis, particularly of the proximal portions of the upper extremities and of the musculature of the neck and shoulder regions. The mortality is 30 per cent. The pathologic-anatomic changes in the central nervous system recall descriptions of the Japanese (summer) encephalitis and of the American (St. Louis) encephalitis. The epidemiologic picture of tick encephalitis is characterized by the strict seasonal character. It begins about the end of April, reaches its severest stage the end of May and the first part of June and then declines, only a few sporadic cases occurring after July. The appearance of the tick encephalitis seems to be connected with work in the taiga (swampy forests of Siberia), particularly with the sartage of these regions. The climatic conditions at the time of occurrence are characterized by moderate temperature, high humidity and considerable precipitation. The chief epidemiologic characteristics can be explained by the existence of vectors—that is, ticks of the family Ixodidae. The seasonal occurrence of tick encephalitis follows the period of maximal activity of these ticks. The vector role of the ticks was demonstrated by the detection of spontaneously infected Ixodes persulcatus in the regions where the disease was endemic, by long survival of the virus in artificially infected ticks, by virus transmission by bite and by virus transmission by the transovarian route and in the course of metamorphosis. At the same time that the ticks were studied the possibility of a virus reservoir among the forest mammals was investigated, and it was found that some rodents and insectivores harbor the virus. A considerable percentage of human subjects living in the region where the disease was endemic had a neutralizing antibody content against the encephalitis virus, and the serum of cattle, horses and other animals disclosed the same protection. Tick encephalitis is caused by a neurotropic, filtrable virus which is pathogenic for white mice, monkeys, some rodents and birds. The most reliable method of culturing the virus is transmission to the mouse of a brain emulsion from human beings who have died of the encephalitis. The virus resembles the causal agents of other seasonal forms of encephalitis (Japanese and St. Louis) and differs from them in certain serologic characteristics. The author thinks that the reported studies permit the assumption that the causal agent of tick encephalitis is a specific ultravirus closely related to that of Japanese summer encephalitis.

Acta Chirurgica Scandinavica, Stockholm

85:1-260 (July 11) 1941. **Partial Index**

Procaine Hydrochloride Block of Stellate Ganglion: Therapeutic Aid in Sensory Disturbances Caused by Cold. J. Adams-Ray.—p. 1.
Rare Vascular Tumors of Central Nervous System: Four Cases. N. Antoni.—p. 7.
*Tumors of Parathyroid Glands. H. Bergstrand.—p. 25.
Astrocytomas of Corpus Callosum: Symptoms and Surgical Treatment. E. Busch.—p. 76.
Aspects of Mycotic Changes of Brain. T. Hafström, O. Sjöqvist and F. Henschen.—p. 115.
Question of Chronic Subdural Hematoma. N. Liedberg.—p. 165.
Skeletal Changes in Meningioma of Pontile Angle Which Simulated Acusticus Tumor: Two Cases. E. Lysholm.—p. 195.
Familial Occurrence of Cerebellar Angioma. G. Norlén.—p. 198.
Contribution to the Knowledge of Primary Epidural Tumors of Spinal Canal. A. Snellman.—p. 248.

Parathyroid Tumors.—Bergstrand reports 9 cases of primary hyperparathyroidism. High blood calcium values were present. All the parathyroids of 4 patients were examined and, in 3, more than 1 was appreciably enlarged. In 1 instance it was demonstrable that the adenoma-like new growth involved only one gland. This point could not be determined in 5 cases because the material was obtained at operation or at incomplete necropsy. The author reports a tenth case in which symptoms indicated attacks of acute parathyroid poisoning with disturbances in the cardiac rhythm and blood pressure and gastrointestinal function. Necropsy showed the inferior right and left superior parathyroids to be plum sized and the other two to be more than twice the normal size. Microscopic examination revealed all four parathyroids with large cells rich in protoplasm and free from fat. The newly formed parenchyma in both large tumors consisted of a collection of adenomatous nodules. Such adenomatous parathyroids may exhibit regressive changes similar to those found in the adenomatous goiter. The interstitial connective tissue may increase in amount and become hyalinized, even calcified. Cysts may develop through the collection of follicles dilated by a colloid-like mass or

through softening of degenerated, disintegrating tissue. The study indicates that, in a large number of cases, both the primary and secondary parathyroid enlargement appears anatomically like an adenomatous hyperplasia, analogous to the conditions in thyrotoxicosis. The secondary hyperplasia may be diffuse, but it seems to be able to develop into an adenomatous hyperplasia similar to that in the formation of adenomatous areas of the thyroid. Regarding the supposed primary parathyroid enlargements, many were multiple adenomatous formations in a diffusely changed parenchyma. It is therefore probable that the primary neoplasms in these cases may often actually be secondary to some unknown irritation. If an irritation first produces diffuse hyperplasia and then adenoma-like formations it is easy to understand that the latter would show different degrees of demarcation and different microscopic structures in the same gland. In most cases of osteitis fibrosa the parathyroid enlargement does not resemble a parathyroid tumor but a parastruma. This does not mean that real neoplasms do not exist. The nature of the irritation is most likely a disturbance in the calcium metabolism. That the patients often recover or improve after one or more enlarged glands are removed is no more remarkable than the improvement following partial strumectomy in thyrotoxicosis.

85:261-360 (Aug. 20) 1941

*Experiences with Primary Cholangiography with Particular Consideration of Possible Impairment of Pancreas. N. Liedberg.—p. 261.
Abdominal Pain and Dorsal Splanchnic Anesthesia. O. Hultén.—p. 281.
Combined Evipan-N_2O Anesthesia. T. P. Störtebecker.—p. 299.
Megalourcter in Girl Aged 5. A. Grevillius.—p. 317.
*Clinical Aspects of Traumatic Subcutaneous Rupture of Intestine. N. Liedberg.—p. 325.
*Myxoglobulosis Appendicis. E. Hollström.—p. 347.

Primary Cholangiography.—Liedberg describes his experiences with primary cholangiography and stresses its great value, particularly in the diagnosis of calculi in the choledochus, in the diagnosis of tumors of the biliary passages and in the differentiation between benign and malignant pancreatic compression of the common bile duct. The method is simple and seems to involve no particular risks or disadvantages. However, in some cases pathologic diastasuria has been observed after cholangiography, which seems to indicate that the method may have an irritating effect on the pancreas. For this reason, caution is necessary in the injection of the contrast medium in order to avoid great excess pressure, and particularly in cases of acute cholangitis reserve is advisable with the use of cholangiography.

Traumatic Subcutaneous Rupture of Intestine.—Liedberg discusses 52 cases of subcutaneous traumatic intestinal ruptures. Since most of the patients came from rural regions, it is understandable that the kick of a horse was the most frequent cause of trauma (in 32 cases). Hernia existed in 11 (20 per cent) of the patients. In 5 of these 11 the traumatic agent struck the hernia directly; in some of the other cases the hernia indirectly played a part in the development of the intestinal rupture. Among the factors that are of importance for the early diagnosis of subcutaneous intestinal rupture, the author mentions careful analysis of previous history, particularly of the nature and intensity of the trauma; analysis of the nature of the pain; frequent inspection of the abdomen, because increasing muscular tension is of vital importance; rectal palpation, particularly for sensitivity to pressure in Douglas' region; observation of the pulse, because increase in its frequency is a warning, and examination of hernial regions and roentgen examination in obscure cases. If intestinal rupture is certain or highly probable, laparotomy is necessary. Experience indicates that the earlier the operation is performed the better are the results. However, some writers advise against operation during the period of shock. The subcutaneous intestinal rupture can usually be repaired by suturing; resection is necessary only in case of extensive or multiple tears or when long portions of the mesentery are torn away from the intestine. The total mortality in the reviewed material was 36 per cent. Of patients operated on during the first six hours 23 per cent died; of those operated on later 50 per cent died.

Myxoglobulosis Appendicis.—Hollström describes a case of myxoglobulosis appendicis in a man aged 60. The patient was subjected to appendectomy twelve hours after the appearance of the first symptoms. The surgical specimen, together with the globoid mucinous bodies which it contained, is reproduced in a color photograph. The author points out that myxoglobulosis has been designated also as "fish egg mucocele." Obliteration of the appendix, increased secretion of mucus and absence of purulent bacteria play a part in the development of mucocele, but the development of myxoglobulosis requires in addition a mechanical factor and possibly a colloid chemical process. The author reviews the theories that have been advanced with regard to the development of the globules of mucus. On the basis of figures cited by other investigators he estimates that myxoglobulosis is observed about once in every 47,500 appendectomies. Of 36 cases of myxoglobulosis described in the literature, in 7 the disease had given rise to pseudomyxoma peritonei, and in 1 case the myxoglobulous appendix had encircled a coil of the small intestine, its apex adhering to the cecum and thereby giving rise to ileus. In the other cases myxoglobulosis had produced symptoms of appendicitis, had been found accidentally in the course of operations made for reasons other than suspected appendicitis or had been noted in the course of necropsy.

Nordisk Medicin, Stockholm

11:2117-2164 (July 12) 1941. **Partial Index**

Hospitalstidende

*Investigations on Relation of Sedimentation, Serum Proteins and Sternal Punctate in Serum Sickness. H. Gormsen and F. Heintzelmann.—p. 2125.
Serum Treatment in Appendicitis. B. J. Fog-Møller.—p. 2129.

Relation of Sedimentation, Serum Proteins and Sternal Punctate in Serum Sickness.—In 11 of 13 patients with serum sickness after treatment of pneumonia with rabbit antipneumococcus serum and in 1 patient with serum sickness after treatment of diphtheria with horse diphtheria antitoxin Gormsen and Heintzelmann established a definitely increased sedimentation reaction, while 6 of 7 patients given similar treatment without serum sickness showed steadily decreasing sedimentation values. In 2 of 3 grave cases of serum sickness they found severe hyperglobulinemia, and in the third case the maximum normal globulin value; in 1 moderately grave case and in 1 mild case the globulin values were normal. In the 4 most severe cases of serum sickness there was a pronounced increase in the plasma cells in the bone marrow. Both the serum globulin and the plasma cell values in the bone marrow were normal in 4 control patients not given serum treatment and examined in the same stage of the primary disease (pneumonia) as the patients with serum sickness. The authors assume that the hyperglobulinemia, which may depend on an antibody formation, is connected with the demonstrated increase in the plasma cells of the bone marrow. This is seen to support Bing and Plum's theory of the plasma cells as formers of globulin.

Ugeskrift for Læger, Copenhagen

103:731-762 (June 5) 1941

Osteomyelitis and Trauma: Significance of Traumas in Pathogenesis of Hematogenic Osteomyelitis Disorders. H. Thomsen.—p. 731.
Westbues' Treatment of Fractures of Calcaneus. K. Lehmann.—p. 738.
*Treatment of Inguinal Hernia in Children: Results of Lorthior's Method. K. H. Køster and P. Fix.—p. 744.
Gonadotropin Treatment of Sterility: Discussion of Case. S. Franck and C. Hamburger.—p. 748.
Fracture of Lesser Trochanter. T. S. Hansen.—p. 749.
Case of Isolated Fracture of Lesser Trochanter. P. N. B. Eliasen.—p. 751.

Treatment of Inguinal Hernia in Children.—Køster and Fix say that inguinal hernia in childhood is congenital and depends on the persisting processus vaginalis (canal of Nuck). At any time after birth the bowel or other viscus may descend into this preformed sac. The treatment is operative. The operations should be performed as early as possible by a simple technic, with removal of the hernial sac and avoidance of plastic surgery, best and most rapidly according to Lorthior's method. Follow-up of 113 cases of inguinal hernia in children operated on according to Lorthior and Czerny showed testis atrophy in 2 but no recurrence. In eighteen inguinal hernias in children operated on by other methods there were 2 cases of testis atrophy and three recurrences. The average time of observation was eight and a half years.